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Release Notes

The Demo and the Damage Done

Let me just start off by saying: No, you may not have her e-mail address.

Good, now that we've got that out of the way, we can proceed with some semblance of order and decorum…

If you follow online scuttlebutt, you already know that someone leaked a rough alpha version of a *Doom III* demo. This early build is buggy, visually unrefined, and slower than the final product—but it still looks absolutely, bloody-fantastic-amazing and serves as proof positive that John Carmack's new engine is, quite simply, the most revolutionary assemblage of computer code that consumers will ever experience.

The problem is that the demo leak should never have occurred. A number of web sites are suggesting that ATI (the videocard company) is responsible for the leak, and some people are even weaving grand conspiracy theories that ATI leaked the demo to show off the power of its Radeon 9700 Pro graphics processor.

Maximum PC has yet to see any conclusive evidence that ATI is to blame, and we doubt that ATI would be foolish enough to jeopardize its relationship with id Software for a brief spike in mindshare. It's much more likely that someone in the PC hardware industry got sloppy, and let loose a reference system that contained the *Doom III* executable, or perhaps put him or herself in a position where the demo could be stolen. Regardless, whoever distributed the demo to the masses royally screwed matters for the rest of us.

id Software is already protective enough of *Doom III*, but now it's got evidence that any paranoia on its part is justified! The upshot is that legitimate magazines and web sites will probably now have a much tougher time securing screenshots and sneak peaks of the game as it evolves—and this hurts the entire gaming community, journalists and gamers alike. Sure, if id had released a demo voluntarily, we would have worked our asses off to get it on our CD as soon as possible. Nonetheless, "the public's right to know" isn't absolute, and we believe that maintaining good relationships with people like John Carmack better serves our readers in the long run.

Finally, there's the matter of respecting 3D game engines as pieces of art. Distributing a crude, unfinished version of *Doom III* to the masses is akin to happening upon a half-finished portrait sitting on an easel in Picasso's front yard, then grabbing it, and rushing it over to the town square for public viewing. Artists have a right to decide when their works are ready for scrutiny, and the id developers were denied that right.

I speak for the entire *Maximum PC* staff when I say we sure enjoyed seeing the crude *Doom III* code, but we just as easily could have waited for id to release content on its own terms.

—JON PHILLIPS

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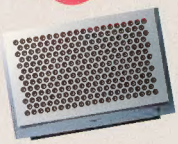

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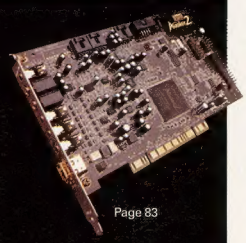

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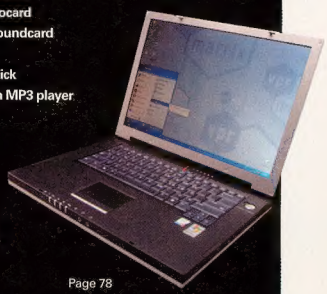

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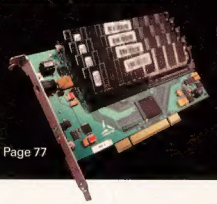

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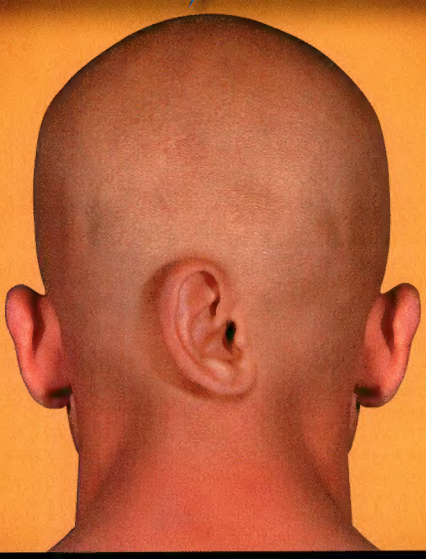

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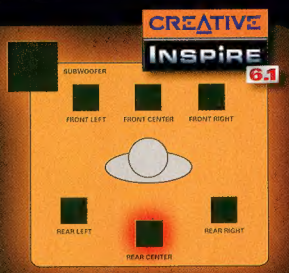

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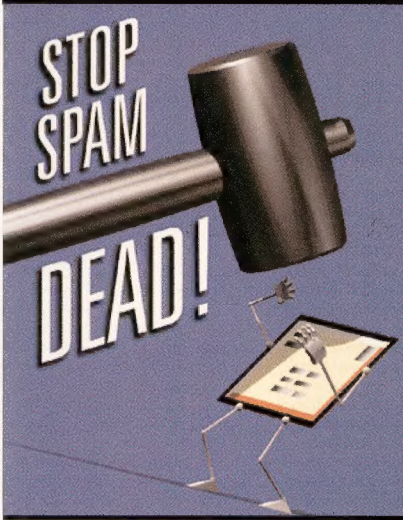

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Have you had it up to *here* with all the junk e-mail flooding your inbox? Is spam waging war on your sanity?

Well quit your belly-aching and get a grip, man. We'll show you some steps to stopping the madness.

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HASN'T AMD HAD ENOUGH ABUSE?

In your November 2002 "AMD Strikes Back" comparison test, you pitted a P4 chip against AMD's latest and greatest Athlon XP, the so-called "2800+." I was wondering how a Hyper-Threaded Xeon would have done in this benchmark comparison?

—TIMOTHY YOWELL

SENIOR EDITOR GORDON MAH UNG RESPONDS: A 2.8GHz desktop Pentium 4 riding on a 533MHz bus probably offers the best performance in the Intel family. When we received the Athlon XP 2800+ machine, Intel's fastest Xeon was running at 2.4GHz on a 400MHz bus. In a cat fight, the Athlon XP 2800+ would likely have mauled a single Xeon at that clock rate.

In the majority of our benchmarks, Hyper-Threading wouldn't have made a huge difference. Certainly none of our game benchmarks would have been boosted by Hyper-Threading, but in *LightWave 7.5 3D* rendering, we probably would have seen a boost with the Xeon's Hyper-Threading enabled. We probably would have also seen spikes in *Photoshop 7.0*, *SiSoft Sandra*, and certain portions of the *ViewPerf 7.0* suite. For more details on Hyper-Threading, see page 70.

"While we're at it, we can change our name to PC Magazine, and review sensible office productivity apps."

Of course, pitting a single Xeon against a single Athlon XP wouldn't be the most telling battle. The proper match would be Athlon MP versus Xeon in a dual proc match-up.

FOLDING FOR THE FUTURE

I would like to invite all readers to join *Maximum PC* magazine's newest distributed computing team running Folding@Home. By studying the way proteins fold, Stanford University's Folding@Home project will lay the groundwork needed to cure Alzheimer's, Mad Cow, ALS, and Parkinson's diseases, as well as many cancers believed to result from protein misfolding. So far, our testing reveals that the Folding@home software has not attempted to install unwanted programs like some other distributed processing clients we've seen.

Download the client (a mere 360KB for the command-line version) at **http://folding.stanford.edu** and remember to join Team Maximum PC (team #11108) when prompted to enter your team number.

—MARK "[CH]AMSALOT" MILLER, MaximumPC.com forum moderator

TRACKBALL GAMING

I was just reading your November issue in which Will Smith reviews several new optical mice. At the beginning of the article he states, "Trackballs are just about worthless for gaming." I have been a hardcore gamer since home computers were first put on the market, and ever since Logitech came out with the Trackman Vista, I have used only trackballs for gaming.

I currently use a Microsoft Optical Trackball Explorer, and have never found a better device for playing games. I'm almost always online playing *America's Army* or *Tribes 2*, and consistently score at the top of the scoreboards. First-person shooters are also easier to play with a good trackball.

I owe a lot of my gaming success to trackballs. They allow me to react much more quickly to in-game situations with just a twitch of a finger instead of having to move my entire hand and wrist. They also save me the trouble of having to reorient my hand position every so often, which is what occurs when you move a mouse too far.

Two bits of advice: Stay away from thumb-controlled trackballs; these are hard to use in games. Look for a trackball that lets you comfortably use your middle and pointer fingers to control the ball, and also always turn down the mouse sensitivity, especially if you have a newer system. You will see a huge improvement with your precision during games.

—KENNETH ELLIOTT JR.

TECHNICAL EDITOR WILL SMITH RESPONDS: Back in the good-old days of *QuakeWorld*—that's the net-optimized version of *Quake*, for all the youngsters out there—I too was a trackball gamer. My weapon of choice was a Logitech Trackman Marble, and I spent lots of time logging into servers, seeing bad guys, shooting at them a couple of times, and then dying horribly. As if my rising death count wasn't enough, my thumb was always sore from constantly moving the ball.

You're using a finger-manipulated trackball, which is a little better, but we still maintain that slowly moving a mouse over a large area on your desk gives you better accuracy than quickly moving a trackball over a small area.

I don't claim to be the ultimate authority on the mouse vs. trackball debate, so I asked my co-workers at *Maximum PC* and *PC Gamer*. Out of 12 editors, only one uses a trackball for day-to-day gaming, and that's because he has a shoulder injury that prevents him from using a mouse. We think that says all there is to be said.

Of course, all bets are off if you plan on playing *Missile Command* or *Centipede*.

MAXIMUM PC: WE GOT 'TUDE

Let me get this straight: A school teacher unceremoniously craps on the seal of approval that is so dear to your heart and mine, because it would bother his conscience to tell a gaggle of 13-year-olds what magazine he reads [In/Out, October 2002]? His solution to this hot-button issue is to change "Kick Ass" to "Kickin!"? Hey, that sounds great! Just make sure you leave off the "g"—we'd hate to lose our edginess. While we're at it, we can change our name to *PC Magazine*, and review sensible office productivity apps.

—RUFUS JOHNSTON

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: For the record, not a single office app appears in this year's Softy Award roundup!

PDA RAID?

OK, so we've got CompactFlash Type II IBM MicroDrives that hold 1GB, and we've got PC Card adapters that accept CompactFlash. You can put a MicroDrive in the adapter, and slap the adapter into your notebook, PDA, or whatever.

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COMING NEXT MONTH

IN THE CURIOUSLY STRONG FEBRUARY ISSUE OF MAXIMUM PC

ULTIMATE TROUBLESHOOTING GUIDE

In a perfect world, you'd never have any problems with your PC. Every component would work in perfect harmony, every driver would perform flawlessly, and brand-spanking-new technology would integrate seamlessly into your system.

Well we don't live in a perfect world.

So if there's one lesson you can't be without, it's *Maximum PC*'s Ultimate Troubleshooting Guide. We'll give you clear, explicit solutions to the most annoying PC problems, and teach you actual troubleshooting theory, so you can fix future PC mishaps all on your own. Every important PC category—memory, videocards, hard drives, and more—is covered. If "Ask the Doctor" is your favorite section of the magazine, then this is the story for you!

EXTREME COOLING

Can't beat the heat? Want to squeeze a few more MHz from your sweaty CPU? Are your case fans louder than your speakers? Then you need more than just cooling. You need *extreme* cooling. We'll explain how the latest watercooling and phase-change kits work, and put four of them to the test in rigs we've overclocked to the verge of a meltdown.

GEFORCE FX, COME ON

nVidia's ballyhooed next-gen graphics chip, previously codenamed NV30, now has an official name. But actual Geforce FX cards are still elusive. We've sent a reconnaissance team out with strict orders not to return until they've bagged one. When they deliver the goods, you'll get the stats, the benchmarks, and the answer to the Big Question on everyone's mind: nVidia or ATI? (Warning: This article will be delayed if we can't secure a card by our press deadline.)

Now, have you noticed that two CompactFlash cards are about the size of a PC Card? Device addressing of two MicroDrives on one PC interface would be an issue, but not if the adapter also acts as a RAID 0 controller, striping the little buggers together and presenting them to the operating system as a single drive.

Imagine the bragging rights of having a Compaq iPaq bearing 2GB of hard disk space—in RAID 0.

—MARK MCCRACKEN

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: It's wickedly elaborate technical schemes like this that make us grateful that *Maximum PC* readers are just hardcore computer geeks, and not research scientists working for North Korea. Regardless, seemingly implausible power toys do have a strange way of achieving fruition: "Four gigs of solid-state memory on a PCI add-in card? Naw. It'll never happen!"

MORE THAN A MAGAZINE

I'm a 16-year-old devotee of your publication, writing to you out of Atlanta, GA. I can't express to you the profound impact *Maximum PC* has had on my life. In this year's September issue Release Notes column, Mr. Phillips, you expressed the fact that you "find it so hard to believe that *MPC* means so much to so many people." You are certainly more than just a little old magazine. *MPC* is not a literary work; it's a symbol. I don't love *MPC* for the knowledge it gives me, nor for the help it provides, but for the community it unites me with. I'm not just a kid. I'm a computer enthusiast. *MPC* represents what it means to love a computer. It's not a hobby, nor a profession or interest, but a passion!

I give you best wishes, and more thank-yous, props, and shout-outs than one letter could ever contain. And these go not just to today's staff, and not just to everyone who has ever contributed to *MPC*, but to the community in general—computer enthusiasts everywhere—and for all those who are just in it for the love.

BUT, WHAT DOES IT MEAN?

Somehow I started receiving your magazine (I don't know exactly how), but I would never pay money for it. I'd like to know more about computers and how they work, which ones are best, how to assess the differences, and so on, but I can't make sense out of any of the articles or ads in your magazine. It's like reading a foreign language. To formulate a GRTS from the current 15matz's with an updated OZNy from IXONy will be available in November. Readers are looking forward to getting a STW system
to add to their quitar systems and replace their QzTRYx.

Does that make sense to you? That's what your articles and ads look like to me. I just can't make sense of any of it. I don't mind receiving *Maximum PC*. I just would never pay anything to receive it.

—osquick2001

MANAGING EDITOR KATHERINE STEVENSON REPLIES: I sympathize with your limited-slip differential, but *Maximum PC* is for double-coil humbuckers, not beginners like yourself. If you find our constant references to RFA-certified flange clamps and anaerobic fermentation to be confusing, you might consider a magazine geared toward more rudimentary sugarcraft. Just a thought.

PHILLIPS: FRAUD

Well, Jon, I'm surprised at you. Here you get this comely lass to appear in your rag, then taunt every red-blooded male reader by refusing to give out her e-mail address ["Release Notes," December 2002]. I don't actually want her address, Jon. But, I'll call your bluff and raise you one. You don't really have her address, do you? You said yourself, if you want to hire her, call her agent—so you have her *agent's* e-mail address.

—JERRY GENAW

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: Uh... Well... No, you may not have her e-mail address!

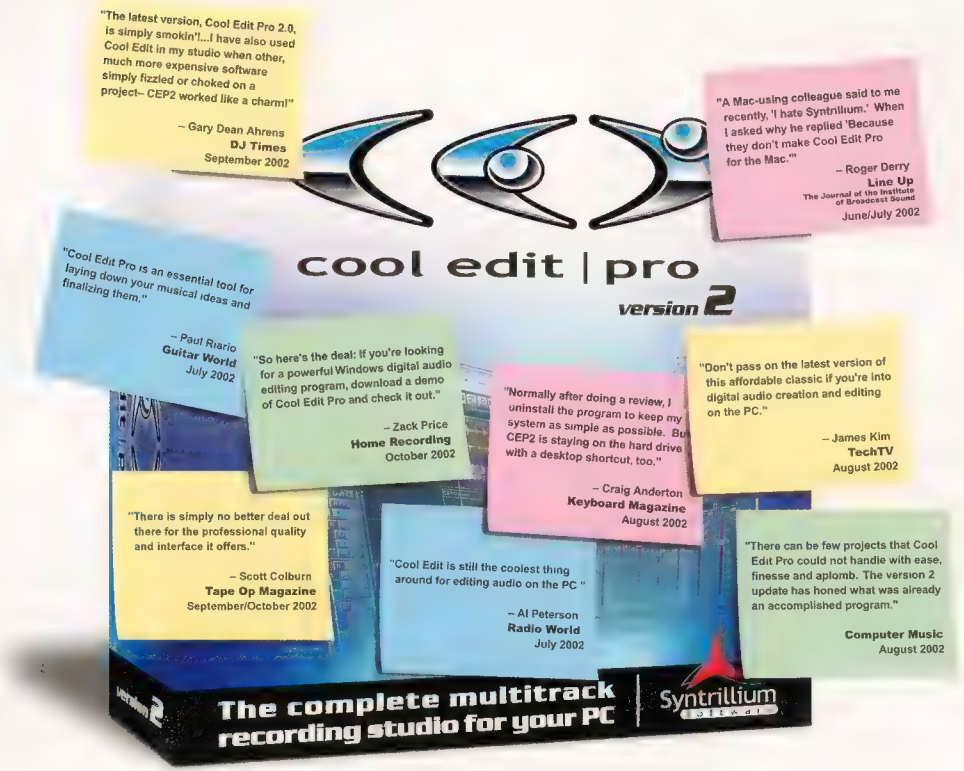
PC VS. MAC

I work with a bunch of graphic-designing Mac jocks, and we are constantly going back and forth about which platform can perform intense *Photoshop* tasks the quickest. I went out on a limb and boasted that the 2002 Dream Machine could whip the best dual-processor G4 that Apple sells. Have you guys run any tests on this?

—TONY WILLINGHAM

SENIOR EDITOR GORDON MAH UNG REPLIES: Stay tuned for our March "Speed" issue. We'll get to the bottom of this ongoing debate. ■

Don't take our word for it.
Stick with what the pros say.


"The latest version, Cool Edit Pro 2.0, is simply smokin'!...I have also used Cool Edit in my studio when other, much more expensive software simply fizzled or choked on a project– CEP2 worked like a charm!"
– Gary Dean Ahrens
DJ Times
September 2002
"A Mac-using colleague said to me recently, 'I hate Syntrillium.' When I asked why he replied 'Because they don't make Cool Edit Pro for the Mac.'"
– Roger Derry
Line Up
The Journal of the Institute of Broadcast Sound
June/July 2002
cool edit | pro
version 2
"Cool Edit Pro is an essential tool for laying down your musical ideas and finalizing them."
– Paul Riario
Guitar World
July 2002
"So here's the deal: If you're looking for a powerful Windows digital audio editing program, download a demo of Cool Edit Pro and check it out."
– Zack Price
Home Recording
October 2002
"Normally after doing a review, I uninstall the program to keep my system as simple as possible. But CEP2 is staying on the hard drive with a desktop shortcut, too."
– Craig Anderton
Keyboard Magazine
August 2002
"Don't pass on the latest version of this affordable classic if you're into digital audio creation and editing on the PC."
– James Kim
TechTV
August 2002
"There is simply no better deal out there for the professional quality and interface it offers."
– Scott Colburn
Tape Op Magazine
September/October 2002
"Cool Edit is still the coolest thing around for editing audio on the PC "
– Al Peterson
Radio World
July 2002
"There can be few projects that Cool Edit Pro could not handle with ease, finesse and aplomb. The version 2 update has honed what was already an accomplished program."
Computer Music
August 2002
The complete multitrack recording studio for your PC
Syntrillium Software

cool edit | pro

The reviews are in and the critics agree: Cool Edit Pro 2.0 is cooler than ever. It's packed with all the latest cutting-edge features for digital audio recording, editing, and mixing. Whether you're already a pro, or just getting started with PC-recording, Cool Edit Pro has the power, features, effects, formats, and flexibility to get the results you want. Even better, Cool Edit Pro users get free access to over 2,000 royalty-free loops of every kind of music imaginable from Loopology.com. You want to pack your PC with the best in audio? Try Cool Edit Pro.

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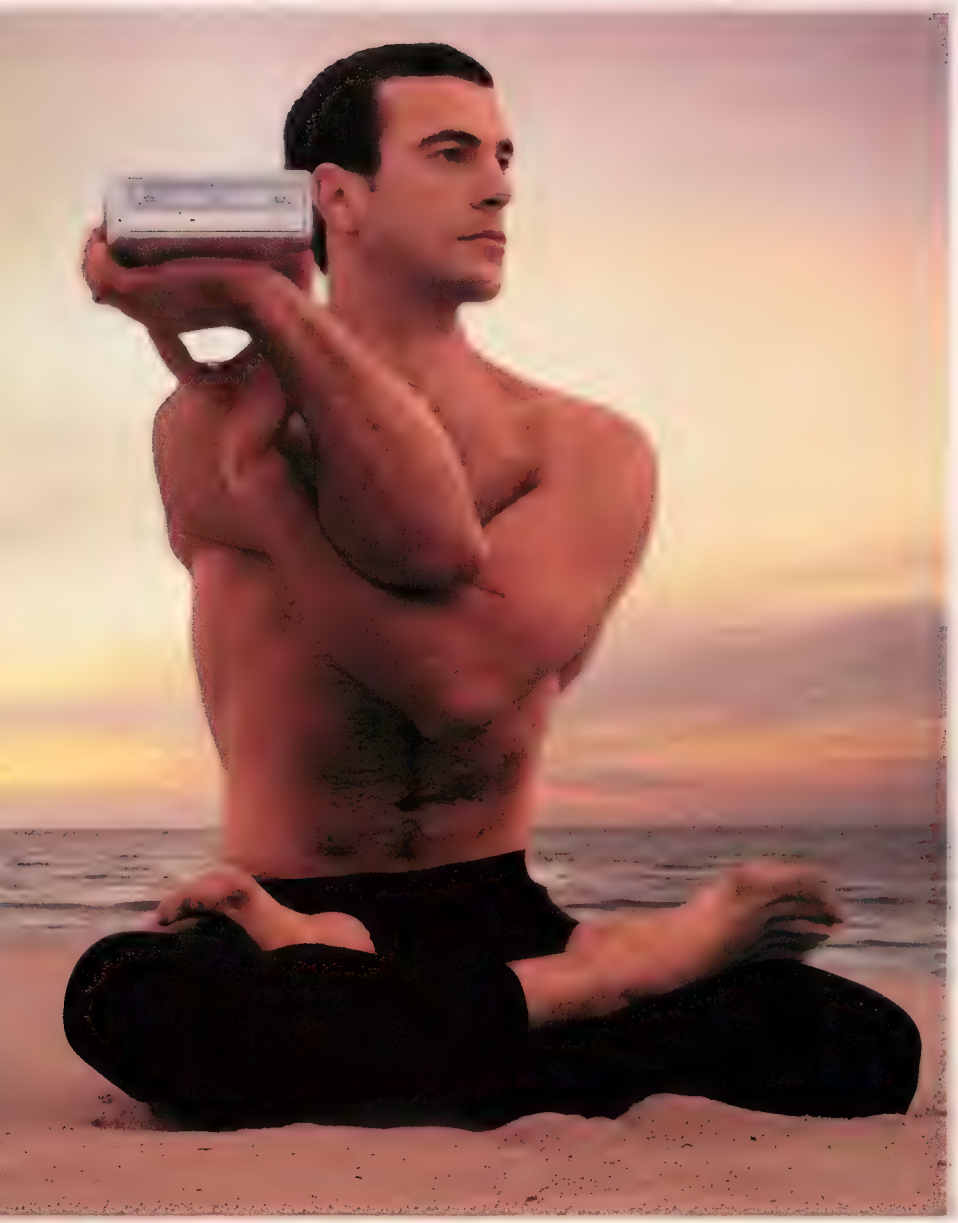


shows and burn your original music. You can even preserve your tape collection for playback in most DVD players. And with 4.7 gigabytes* of data storage, the Dual RW drive has plenty of room for all your fresh ideas. www.sony.com

Quick Start

The beginning of the magazine, where articles are small

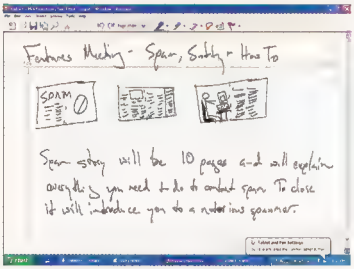
Tablet PCs: Mice Begone!

Microsoft births a new formfactor for personal computing

The death of the desktop PC might not be imminent, but Microsoft is doing its damnedest to make sure it's got a viable operating system ready for whatever hardware platform takes it place. This month, we had our first look at Windows XP Tablet Edition, an extension of WinXP that provides handwriting and voice-recognition for a whole new batch of funky formfactor computing devices. Tablet PCs easily created the largest buzz at Fall Comdex 2002, so get ready power-users—these babies are coming your way.

Tablet PCs fill the gap between handheld PDAs and full-fledged notebooks, and they're sexy as hell. But are we willing to give up our mice and keyboards for the privilege of—let's face it—surfing the web while we're in the john?

Viewsonic, Toshiba, Fujitsu, Acer, Hewlet-Packard, Panasonic, Tatung, and Motion Computing have all announced different products, but the devices come in just two basic formfactors: "convertibles" and "slates." The convertible formfactor is a bit larger than a standard notebook, and even includes a keyboard and mouse, so you can use it just like a notebook when necessary. To turn the convertible into a tablet, you simply swivel its screen around (positioning the back of the screen over the keyboard itself), and start entering text with your stylus.


Features Meeting - Spam, Sushy + How To
SPAM
Spam story will be 10 pages and will explain exactly if you need to do to combat spam. To close it will introduce you to a notorious spammer.

If the computer can't read your writing, you can leave it in your natural scrawl in *Windows Journal*.

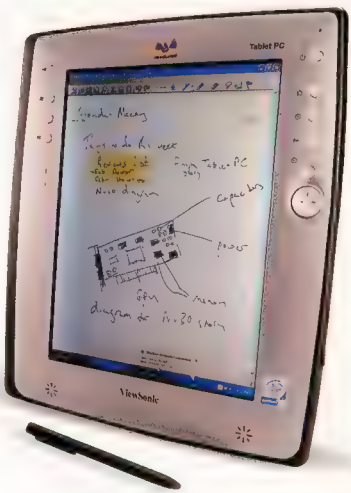
The slate devices (like the ViewSonic pictured here) use a more revolutionary design—no mice, no keyboards, no swiveling. They look like overgrown PDAs, but are actually smaller and thinner than the convertibles because they don't have to accommodate traditional input devices. Some Tablet PCs will omit optical drives, but FireWire, USB 2.0, and Wi-Fi support should be ready to bail you out of I/O jams.

In addition to built-in handwriting and voice-recognition software (which we'll discuss shortly), Windows XP Tablet Edition includes two entirely new apps: *Windows Journal* and *Sticky Notes*.

Windows Journal works like a piece of low-tech paper. You open the application, and then write on the screen like you would on a normal notepad. You can use handwriting recognition to convert the notes to typed text, or just save the raw scribbles to your hard drive. *Windows Journal* can also do handwriting recognition in the background while leaving your handwritten notes intact—it's the same chicken scratch, but keyword-searchable! This may seem like a silly feature, but if you've ever tried to find a particular paragraph of information in a stack of 20 legal pads, you'll immediately see the value.

Sticky Notes works like a digital Post-It note: If you just want to jot down some quick information, and don't need the much more powerful *Windows Journal*, you can use *Sticky Notes* to create a written note or voice reminder. It's an interesting app, but isn't as well integrated with the rest of the OS as *Windows Journal*.

We spent three intriguing days with the ViewSonic V1100 and found that voice and handwriting recognition works better than expected, and that stylus navigation works great in lieu of a mouse. The OS can be set to recognize normal handwriting, Graffiti characters (first made famous by Palm devices), and the handwriting system used by Windows CE devices. Handwriting recognition also seemed to improve the more we used the tablet (we're not sure if the device adapted to our handwriting, or if we adapted to the device). Entering data via handwriting recognition is less convenient than using a mouse and keyboard, but it's not so frustrating that we'd toss the Tablet PC in a drawer after just a few minutes of use. And in many settings—sitting on the living room couch, looking up recipes in the kitchen, taking notes at the construction site—stylus-based input is welcome.



Meet the future of computing sans keyboard and mouse. It's also interesting to see ViewSonic, a monitor company, getting in on the portable game.

Voice recognition? Well, with just 10 minutes of training, the voice-recognition system worked about 80 percent of the time, even in the noisy environment of the Maximum PC Lab. Still, we always felt silly talking into the PC.

We're cautiously optimistic about the Tablet PC phenomenon. We didn't review the ViewSonic V1100 this month because we want to get a number of products in the Lab, and then compare them with each other. (We suspect the versatility of the convertible design will emerge as the clear winner.) We predict that despite their high prices ($1,500 and up), the Tablet PCs will find their niche.

And, by the way, this entire article was written on a Tablet PC.

nVidia Announces the GeForceFX

But does it have enough bandwidth to catch ATI off guard?

Just as this issue was going to press, nVidia announced its Radeon 9700 killer—the GeForceFX. The new cards will be based on the NV30 core (previewed last month), and be DirectX 9–compliant. This means the entire 3D pipeline offers 128-bit floating-point precision. Expect the cards to ship with 500MHz cores and 128-bit DDR II memory running at 500MHz. Memory amounts haven't yet been announced.

Although the GeForceFX's core speed is significantly faster than the 325MHz core of the ATI Radeon 9700 Pro, nVidia's card has a much skinnier memory interface (128-bit vs. ATI's 256-bit interface). The upshot is that the GeForceFX can pump data at just 16GB/sec across its memory bus, whereas the Radeon 9700 Pro hits 19.8GB/sec. Evaluating real-world performance without real-world testing is impossible, so we'll let you know how the GeForceFX stacks up in the speed department next month.

nVidia's huge core speed advancements—and long delays in getting a new chip to market—are a result of the company's move to a 0.13-micron process technology. By shrinking the core's size, using copper interconnects, and moving to a flip-chip design, the GeForceFX can run at higher speeds than any other GPU.

The chip's main technology advance is in its programmable shaders, which are touted as supporting some cinematic-caliber shader effects in realtime—like the tricks you see in *Monsters Inc.* and *Final Fantasy*. By extending the length and complexity of the instructions that can be run through the shaders, game developers are provided with more flexibility and power.

Expect to see GeForceFX-based boards from Gainward, ASUS, eVGA, Leadtek, MSI, and PNY early next year. Pricing is expected to be in line with ATI's.

nVidia Introduces Shaders To Go

Notebook gaming gets some serious gaming upgrades

ATI may have been the first to stuff pixel and vertex shaders into a notebook graphics chip, but nVidia says that its new GeForce4 4200 Go will beat the crap out of the Mobility Radeon 9000.

The GeForce4 4200 Go finally brings full pixel and vertex shader support to an nVidia notebook part. The company's GeForce4 420, 440, and 460 parts were based on the emaciated GeForce4 MX core, but the GeForce4 4200 will use the same core as the desktop GeForce4 4200.

The "shady" chip in question.

The GeForce4 4200 Go also marks the first portable chip with AGP 8x support, a rather premature advancement. (Intel has yet to introduce a desktop core-logic chipset with AGP 8x support, let alone a mobile one.) Unlike its desktop equivalent, the GeForce4 4200 Go has power-management features to lower voltage, and clock gating to turn off sections of the chip not in use. Clock speeds (and thus power requirements) can also be lowered depending on the chip's task load.

Mobile graphics technology has always lagged behind desktop tech, but notebooks are increasingly nipping at the ankles of desktop PCs. Vendors are now stuffing 2.8GHz desktop Pentium 4s into notebooks already equipped with next-gen graphics chips. What's more, IBM is now making 7200rpm notebook hard drives, shattering the pathetic 5400rpm notebook standard. 2003 will be a very good year for gamers on the go.

Why Banias Will Rule

Banias—Intel's new mobile processor—doesn't score any technology breakthroughs, but it's still a watershed event. From now on, the most successful mobile processors will be special low-power designs, not desktop processors tweaked for the mobile market.

Intel plans to ship Banias in early 2003. Most people will probably focus on the controversy over its clock speed and performance. Banias has a shorter pipeline than the Pentium 4 (more like the Pentium III) and many other microarchitectural differences. As a result, Banias will deliver more performance at lower clock frequencies than the Pentium 4, forcing Intel to alter its marketing propaganda to emphasize benchmark scores instead of clock speeds. Of course, AMD and Apple have been doing this for years with the Athlon and PowerPC, so Intel's "new" marketing strategy will cause much laughter and derision.

But the real news is that Banias marks a fork in the road of x86 evolution. Until now, mobile PC processors were actually desktop processors designed for high performance, not low power consumption. They became "mobile" by adding sleep modes and other minor enhancements.

Mainly, desktop processors didn't go mobile until the next generation of chip-fabrication process technology dropped the voltage and heat dissipation down to levels that were practical in laptop computers. Each new x86 generation (Pentium, Pentium II, Pentium 4 or K5, K6, Athlon) didn't appear in laptops until 12 to 18 months after introduction, because that's the Moore's Law cycle of process technology. The chips needed a process shrink (0.35 microns to 0.25 microns, or 0.25 to 0.18, or 0.18 to 0.13) before their power consumption became manageable in a battery-powered computer with limited cooling capacity.

In contrast, Banias is designed from the start to be a low-power processor. In some cases, it sacrifices performance to save power in ways that would be unacceptable in a desktop processor. From now on, x86 chips are on two diverging evolutionary paths.

This will play to Intel's advantage. Intel has the vast resources required to develop separate families of processors optimized for different markets. AMD is struggling to support one family and must concentrate on performance to stay competitive on the desktop. With x86-64, AMD is aiming for the server market, too, where performance is even more vital. Intel's only competitor focusing on low power is Transmeta. But Transmeta's innovative Crusoe processors rely on emulation for x86 compatibility, and I expect Banias to outrun them at similar power levels.

Prediction: Banias and its descendants will rapidly crush the competition and become the most popular processors for mobile PCs.

Tom Halfhill was formerly a senior editor for Byte *magazine and an analyst for* Microprocessor Report. *He is now a technical writer/analyst in Silicon Valley*

MP3 Meets FM Radio; Coolness Ensues

Neuros players let you grab FM song titles, too

Two new MP3 players from Neuros—a solid-state model, and a hard drive–based version—may soon have you looking at your current player with dismay. In addition to standard MP3 playback, both versions include not only a built-in FM tuner, but an FM transmitter as well! This allows you to tune your car radio, boom box, or home stereo to the same frequency as the Neuros player, and then hear all your MP3s through your FM radio.

But wait, there's more! If you're listening to the radio and hear a song you like but can't identify, the player can record a brief sample, and then upload it (via your PC) to Neuros' servers. Once it's on the servers, the sample is parsed into a database of more than 300,000 songs (a catalog that will, presumably, be updated on a regular basis). The server then returns the name of the song, and everyone's happy.

The solid-state model has 128MB of onboard memory, while the hard drive–based version sports a hefty 20GB internal drive. The units will retail for $250 and $400, respectively. Be prepared for a couple shockers, though. Neither version is storage-upgradeable, and both are limited to USB 1.1. Well, at least this leaves some room for the next generation…

These two MP3 players went to Oz, and came back with FM transmitters and FM radio song-identification superpowers.

Two Speakers, 3D Sound

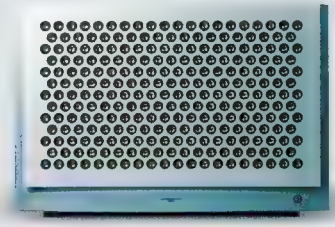
Has Pioneer broken the "other" sound barrier?

As soon as Hercules announced support for 7.1 speaker systems, we let out a collective groan. We quickly envisioned the future of surround sound as culminating in a giant, cushy, speaker-lined sphere that you actually crawl into. It would be called Dolby Digital 27.1—and, trust us, it's those extra 11 rear channels that really make the difference.

Perhaps not. Pioneer is launching the PDSP-1, the first "digital sound projector" to deliver discrete 5.1 channel sound with more than 500 watts of power. Pioneer is quick to add that the system does not use psycho-acoustic modeling, a disappointing technology that attempts to fool our ears into perceiving depth by altering pitch and amplitude.

Instead, 254 speakers are packed into each Pioneer speaker, which direct and reflect sounds off the surfaces of a room to create multiple channels. All you have to do is "calibrate" the speakers to the room they're in, and you'll be dodging bullets and ducking roundhouse kicks during your next viewing of *The Matrix*.

No price has been set, but the speakers should be available early this year. We can't wait to test this audio scheme!



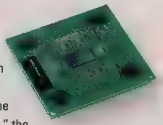
On the rebound: 254 speakers bounce separate channels of audio off your walls for a surround-sound effect.

FUN-SIZE NEWS

SonicBlue and TiVo Make Up

Who says peace never prevails? SonicBlue and TiVo—the respective manufacturers of the ReplayTV and TiVo hard disk–based digital video recorders (DVRs)—have decided to drop their patent infringement claims against each other. Sensing a tightening market (not to mention a likely ugly battle with angry entertainment executives), the companies have decided to drop litigation and focus instead on "the overall success of the DVR category," as stated in a joint statement.

AMD: The Brains Behind the Behemoth



AMD has named the successor to the Athlon XP. The first 64-bit desktop chip from the company is expected in March, and will be officially called Athlon 64. AMD says the Athlon 64 will run 32-bit code faster than today's PCs, and also support 64-bit computing. The company recently demonstrated a 64-bit version of Windows XP as well as a 64-bit version of Epic's *Unreal Tournament 2003*.

And if bragging rights were worth money, then AMD would be rolling in the dough. Sandia National Laboratories, in association with Cray Inc., has announced that it will use AMD's next-gen Opteron procs in its next supercomputer. Known by the sinister name of "Red Storm," the supercomputer will cost $90 million and is expected to hit 100 trillion operations per second. As of press time, no multiplayer online service or exclusive game titles have been announced.

This DVD Will Self-Destruct in 8 Hours

Side-stepping the issue of whether or not optical discs are a reliable long-term storage medium, New York–based Flexplay has invented a DVD that actually destroys itself in eight hours, like it or not. As soon as the sealed DVD case is opened, a dye sandwiched into the layers of the disc begins to react with air, slowly turning opaque and rendering the disc unplayable. The first DVD to use this technology will be a 10-minute promotional audio disc by Atlantic Records artist Nappy Roots, a hip-hop act. Hopefully, Nappy's career will outlast the life of the disc.

Unleash the wrath of the gods
The creators of Age of Empires welcome you to a time when every man came face to face with the power of the gods. Join in the greatest battles of Greek, Egyptian and Norse mythology. Build your empire, farm the fertile valleys and seek out wealth in distant realms in this epic challenge to create the strongest ancient civilization. Rated one of the "hottest PC Games at E3 2002" by Game Informer and one of the "top 10 PC Games of 2002" by PC Gamer, Age of Mythology will change the way you treat your PC. You won't play it. You'll worship it.
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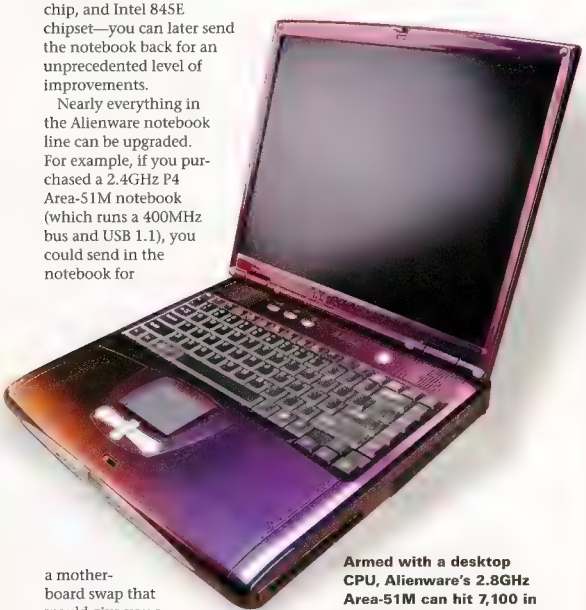
Alienware Notebooks: Upgrades 'R' Us

You buy a top-of-the-line notebook in January, and by June it's obsolete. The CPU is about 500MHz behind the performance curve, and the video chip can't play games that require programmable shaders. Your only recourse is to sell the antique on eBay for a loss.

But now Alienware says it has the answer every hardware junkie is looking for: a new policy that provides comprehensive notebook upgrades. Case in point: If you buy the top-of-the-line Alienware Area-51M today—complete with a 2.8GHz desktop Pentium 4, ATI Radeon Mobility 9000 video chip, and Intel 845E chipset—you can later send the notebook back for an unprecedented level of improvements.

Nearly everything in the Alienware notebook line can be upgraded. For example, if you purchased a 2.4GHz P4 Area-51M notebook (which runs a 400MHz bus and USB 1.1), you could send in the notebook for a motherboard swap that would give you a 533MHz bus and USB 2.0 support.



Armed with a desktop CPU, Alienware's 2.8GHz Area-51M can hit 7,100 in *3DMark2001 SE*. But that's not the best thing about the notebook: The company says you can send it back for upgrades! This includes new paint jobs, like the "chameleon" color shown here.

The company says it will also swap out the LCD panel and graphics subsystem, provided they're compatible with the system's motherboard. If they're not compatible, then you can have the motherboard swapped out, too. Even the chassis can be upgraded to a newer color. Alienware says it will charge for the cost of the parts, but all labor is free.

A New Age for Ensemble

The first time I played *Age of Empires*, it absolutely blew my socks off. For about 15 minutes.

Maybe it was a matter of expectations, but I had gotten the distinct feeling that Ensemble was creating a realtime empire-builder in the *Civ* mold, when in fact it was creating *Warcraft* in a toga. There's nothing wrong with *Warcraft* in a toga, but when you're expecting something a little meatier, it kind of comes up short. Add to that a boatload of annoying problems (interface, path finding, AI), and we're talking about a game that was downright disappointing. As far as I recall, there was also a guy named Stu in Utica who felt the same way, but we were the only two.

Now, five years after I first sighed and shrugged off one of the most beloved and best-selling RTS games of all time, *Age of Mythology* lands on my desk. Those five years were spent honing the core design, upgrading the graphics, tuning all the systems, and selling millions of copies. Either the game changed, or I did, but *AOM* is a damned entertaining and well-designed RTS, albeit one with absolutely no surprises.

Innovation isn't everything, of course. Pure craft—a design studied and perfected by skilled hands—can keep a series fresh without reinventing the wheel. *Starcraft* proved that much. It stuck rigidly to the *Warcraft* balance and feel, but meticulously refined it. *Age of Mythology* works similar magic, at the same time expanding the game world into mythical territory. Ensemble has managed to add depth in surprisingly simple and easily managed ways. The technology trees remain similar to other *AOE* games: essentially basic unit upgrades and Age advancements. But the addition of minor gods to Age advancements provides a strategically important new layer to the game. Since each minor god comes with a power, unique improvements, and units, each player can build a slightly different force as the game progresses

Ostensibly, the appeal of *AOM* is the addition of 3D graphics, mythological units, and Populous-style "god powers," all of which certainly enhance the experience without changing it much. But the real achievement in *AOM* is more subtle. It involves less box-blurb-worthy issues of skillful balance, increased depth without increased complexity for the user, and the creation of forces that can grow and evolve in different ways based on different decisions. Ensemble never did create a true realtime empire-builder, but it has kept the often stale RTS genre fresh through sheer skill.

Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

HP recommends Microsoft® Windows® XP Professional for Mobile Computing.

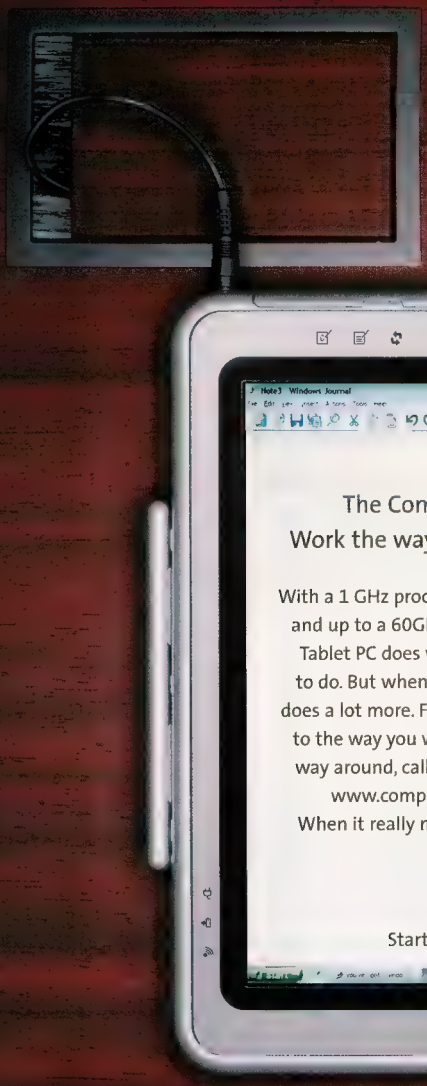
The Compaq Tablet PC lets you jot down your ideas right on the screen. So, unlike a laptop, you don't need to open it to use it. Which comes in handy when your work space is hardly any space. On an airplane, for example.

For those occasions where the pen isn't mightier than the keyboard, just connect the included one and you're off and typing.

HP recommends Microsoft®
Windows® XP Professional
for Mobile Computing.

Shown monitor, keyboard
and mouse sold separately.

Even if you're a Plutonium 1,000,000 K Club business traveler, you'll have to come back to the office eventually. When you do, just set your Compaq Tablet PC in its optional dock and you're good to go. Or stay, as the situation requires.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WatchDog

Say hello to Bear, WatchDog of the Month.

Maximum PC takes a bite out of bad gear

THIS MONTH: The WatchDog goes after...

> Pioneer > Fujitsu Hard Drives > Brother > Toshiba > VIA

Update Firmware or Die!

Normally a firmware or BIOS update is a voluntary action, but Pioneer Electronics recently issued a "mandatory update." Owners of the Pioneer DVR-7000, PRV-9000, DVR-A03, DVR-103, DVR-A04, and DVR-104 2x drives are being told to update the firmware or else! Apparently, the "or else" is pretty serious.

The original firmware of the older, aforementioned 2x drives is incompatible with newer 4x media. Try writing to a 4x disc with a 2x drive sans the firmware update (even if you write at just 2x), and you'll destroy both the drive and the media. The firmware update doesn't allow you to write any faster with your 2x drive, it just keeps you from nuking the device.

The whole mess puts a serious crimp in Pioneer's push to defeat its arch-enemy, DVD+RW. What happens to those consumers who never read this column and consequently destroy their drives? The Dog must point out that newer drives such as Pioneer's A05, Sony's DRU 500 and, of course, any DVD+RW drives are not affected by this firmware bug. To get more info, visit the U.S. site of www.pioneerelectronics.com. Click on the red box that looks like a Surgeon General's Warning. The link will also take you to firmware updates for Apple's SuperDrive (a Pioneer unit), as well as drives from Compaq and other OEMs.

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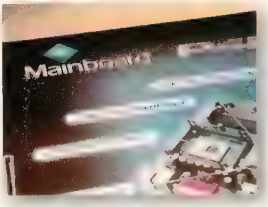
The Dog is still soliciting readers' stories regarding billing by an unfamiliar ISP. If you've discovered that you're being billed by an ISP you've never heard of, it's likely that an ISP you previously used was gobbled up in a merger with another company, which has taken the liberty of reclaiming you as a customer. It's just plain wrong, and the Dog wants to know about it. Send in your story, using the subject line: Bogus Billing. Woof.

Memory Matters

Dear Dog: I ordered a VIA P4PB 400 motherboard based on the box's claim of DDR400 memory support. After fighting for hours with lockups just moments after boot-up, I decided to clock the memory back to 333MHz, and everything ran fine. I e-mailed VIA about the problem and the company responded that there is no DDR400 standard, and that the board I purchased supported only DDR333. I was pretty steamed but decided to wait for a flash for my BIOS that I assumed would repair my problem. A few weeks later VIA released a flash for the board, but it didn't change my situation. I had the RAM tested, and there's nothing wrong with it. I visited

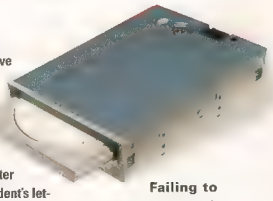


Is VIA supporting DDR400 with the P4PB 400?

the VIA web site and found that the company changed the board's specs. The P4PB 400 is now said to support only DDR333, while the P4PB Ultra will have "limited" support for DDR400—the very same wording that was in my owners manual for the P4PB 400. I e-mailed VIA again asking for some kind of explanation as to why it sold a product without accurate specs and have yet to get a response. I bow before the mighty Dog's paws and ask that he give me justice.

— MARCUS NELSON

THE DOG RESPONDS: The Dog talked to VIA's veep of marketing, Richard Brown, who apologized for the problems. "Because of the lack of a single unified JEDEC standard for DDR400, we did receive a small number of customer reports of DDR400 incompatibility issues with early versions of the board, and we have been working to try and resolve these and speed up the verification of DDR400 modules from different manufacturers," Brown told the Dog. "After reading your correspondent's letter, I recognize that we should've done a much better job of communicating what we mean by 'limited support' for DDR400, on both our packaging and documentation, as well as through our technical support people. I'm very sorry for the inconvenience and disappointment we caused [Marcus Nelson] as a result of this, and am currently reviewing how we can prevent this type of issue from happening again in the future." Brown offered to correct Marcus's problem by replacing the board and supplying a validated 256MB DDR400 module for the board. For what it's worth, *Maximum PC* tested a Soyo motherboard with the same chipset as the P4PB 400 board (December 2002) and had no problems with stability. DDR400 continues to be a bit of a mess, as there's no standard for DDR at that speed. Hats off to VIA for doing the right thing.



Failing to update the firmware on your DVD-RW/R drive may result in damage when trying to burn to 4x media, even at 2x.

Fujitsu's Failing Hard Drives

Dear Dog: I'm the manager at a small reseller that's been in business for seven years. For most of that time we were including Fujitsu hard drives in our systems with very few complaints. Sure, the Fujitsu's were not the darlings of the power gaming world, but they were good quality hard drives that seemed to last. When Fujitsu announced last year that it was no longer going to produce hard drives for desktop PCs, I was bummed because they had been great drives up to that point and the customer service was decent.

What a difference a year can make. I'm ready to drive down to Fujitsu's HQ with a baseball bat and start swinging like Reggie Jackson in

Game 6. What used to be product that had an occasional problem has now turned into a 75 percent to 80 percent failure rate, and that number is climbing. Well, several of the replacement drives have now gone belly up, and I have angry customers asking me why "we" lost all their data. I am now replacing the problematic Fujitsus with new Seagates, but this cost is coming out of our pockets, and I've got replacement hard drives that I don't know what to do with. I will definitely not be using them in our systems.

Have you received any similar complaints about Fujitsu drives? Do you know of any class-action lawsuits that have been filed against the company? I've talked with other OEMs and distributors and they've experienced the same problems and have shelves full of defective drives waiting for an RMA number. I'm hoping that the Dog hasn't eaten too much lately and is looking for fresh meat because I'm pointing you to Fujitsu and saying, "Sic'em!!!"

— GREG PENNER

THE DOG RESPONDS: Just as Greg was complaining, the wheels came off Fujitsu's wagon. The hard drive maker admitted in September that no fewer than 300,000, or 2 to 3 percent, of the 10 million ATA/IDE hard drives sold in Japan between September 2000 and September 2001 will have to be replaced. The defective drives were primarily in Fujitsu's own PCs as well as in PCs from NEC and IBM that were sold in Japan. Only Fujitsu Japan has acknowledged the problem. In the U.S., Fujitsu and Cirrus Logic are suing one another over the problem. Fujitsu alleges that Cirrus Logic supplied a faulty chip which was used in the drives, while Cirrus Logic is battling Fujitsu over a breach of contract.

While many consumers are reporting high failure rates, few have ever complained to the Dog about problems with the drives. That's probably because few power users reach for Fujitsu, and the company stopped selling desktop hard drives more than a year ago.

Just two days after Greg barked to the Dog, a class-action lawsuit was filed against Fujitsu of America and Hewlett-Packard. The suit alleges that Fujitsu and HP sold PCs with problematic drives.

"...Fujitsu and HP have been aware for a substantial time that the MPG3xx Hard Drives are failing at a very high rate, yet they have not warned their customers of the problem or tried to prevent them from suffering system failures and loss of data," the suit alleges. "Defendants are aware of the scope of the problems with the MPG3xx Hard Drive series but have failed to take substantial corrective action. They have taken only minimal action in response to their largest, most belligerent customers' complaints, and in response to all others' complaints have 'run out the clock' until warranties expired. Defendants have failed to even notify their customers of the problems or advise them to "back up" their hard drives regularly to minimize the harm they will suffer when their MPG3xx Hard Drives inevitably fail."

The suit was filed on behalf of Hurkes Harris Design Associates, which had numerous hard drive failures. When HP sent replacement drives, the suit says, they were the same MPG3409AH drives. Of seven replacement drives, six have failed. The suit says that since Fujitsu exited the desktop hard drive market, it has neglected owners of MPG3xx drives. The Dog was unable to reach Fujitsu or Cirrus Logic for comment on the reported failure rates or the lawsuit. Among other drives alleged in the suit to be faulty are the MPG3204AT, the MPG3307AH, and the MPG3409AH. More information on the suit is available www.sheller.com/fujitsuclassaction.htm.

What's the Dog's recommended course of action? Where there's smoke, there's fire. If you have a Fujitsu MPG3xx drive, back up often or run RAID 1 and make sure the other drive isn't an IBM 75GXP. Woof. ■

RECALL ALERT

If you don't get shocked, you might get burned

Can You Spare a Fire Extinguisher, Brother?

Brother International is recalling 100,000 multifunction printers and laser printers which may overheat and cause fire. The company is recalling the HL-1040, HL-1050, HL-1060 laser printers and the MFC-P2000 multifunction printer. The recall is voluntary and being conducted in cooperation with the U.S. Consumer Product Safety Commission. The CPSC says there have been two reports of overheating and fire, with one fire causing minor property damage. No injuries from the fires were reported. The printers were sold in the U.S. between June 1997 and December 2000. The HL-1040, HL-1050, and MFC-P2000 were manufactured in China. The HL-1060 was manufactured in Japan. The model numbers can be found next to the Brother logo on the top of the printer. If you have one of the recalled models, Brother recommends that you immediately stop using it and bring it to an authorized service center for a free repair. For more information, or to find a repair center, contact Brother toll free at 866.236.6835 between 9 a.m. and 7:30 p.m., Monday through Friday eastern time. More information is also available at www.brother.com/usa.

Toshiba e740

The coolest Pocket PC around has a small shoebox of bugs. Toshiba is recalling some of the e740 PDAs because of problems with data loss. The recall affects e740 units with serial numbers 72014641L through 92041620L. Toshiba says the units may lose data if the battery is allowed to fully discharge or if the battery is disconnected from the unit.

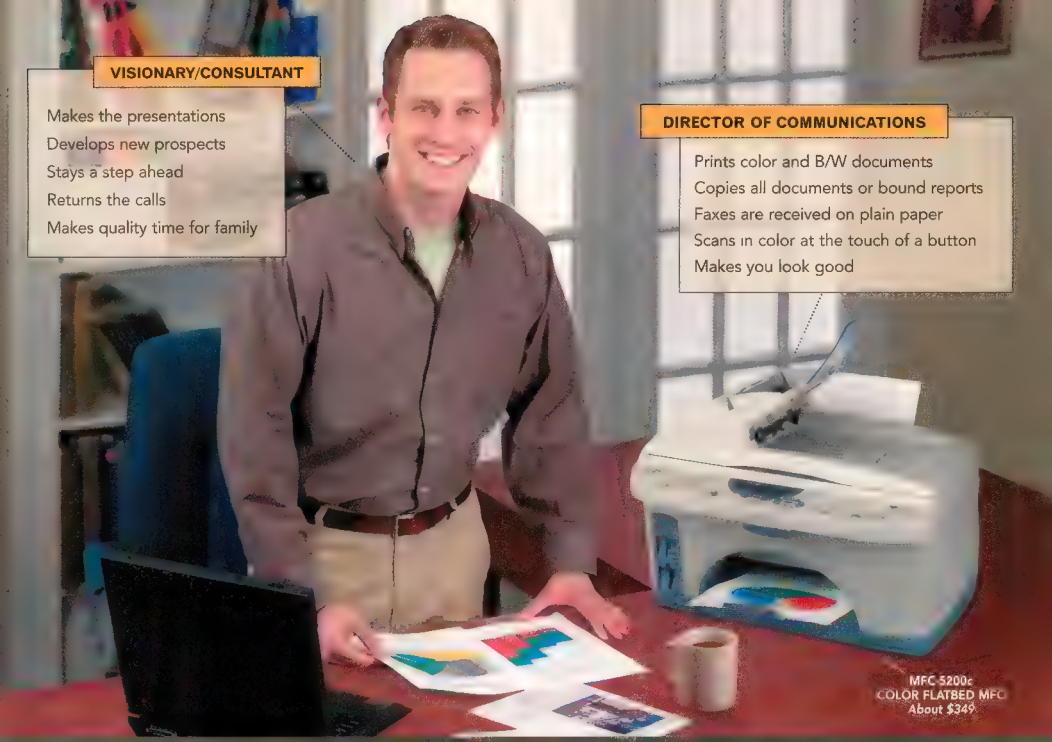
"Our primary concerns are with the quality of the product and your overall customer satisfaction," the company says.

If you have one of the recalled units, contact Toshiba at 800.788.1653. Toshiba will send packaging and pre-pay the shipping for the unit. The company also recommends that you back up any data and return only the unit, not the cradle or power adapter. Toshiba says those users who never let the battery run out, regularly back up data, never disconnect the battery, or always connect to an external power supply may continue to use the unit as is, if they wish. The Dog says, yeah, *right*. More information is available at www.csd.toshiba.com.

Brother HL-1040 and HL-1050

Brother HL-1060

Brother MFC-P2000



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Head2Head

A showdown among doggy-dog competitors

THIS MONTH: CANINES, REAL & ROBOTIC

Say what you will about robotic dogs, but the fact remains that Sony's AIBO breed has evolved more in three years than the flesh-and-blood *canis familiaris* has evolved in 30,000 years!

Now, don't get us wrong. Even the cutest robot dog like our ERS-31L AIBO is no substitute for man's best friend. But if you live in a cramped apartment, or are allergic to dog dander, your only recourse might be canine companionship of the artificially intelligent persuasion. So let's see how an entry-level AIBO stacks up against the dog it's modeled after: a living, breathing, rug-peeing pug.

—JON PHILLIPS

SONY AIBO ERS-31L $600, www.sonystyle.com

Intelligence/trainability: Our AIBO came pre-loaded with *AIBO Pal* software, which saved us all the trouble of socializing him to live with human companions. As soon as we powered him up, AIBO's 64-bit RISC processor sprang to life, and he started gesturing for attention. The 31L's bag of tricks is extensive: Via different dances and sounds (all too cute to be adequately described in *this* magazine) he can respond to the sound of his own name, his owner's name, and basic commands such as "sit down," "stand up," and "shake." Yep, this dog will amaze you with his vast repertoire of tricks, but because he's not capable of truly independent thought—let alone smart enough to rip into a bag of kibble while you're away at work—we just can't say he's smarter than a real dog
Winner: Real Live Pug

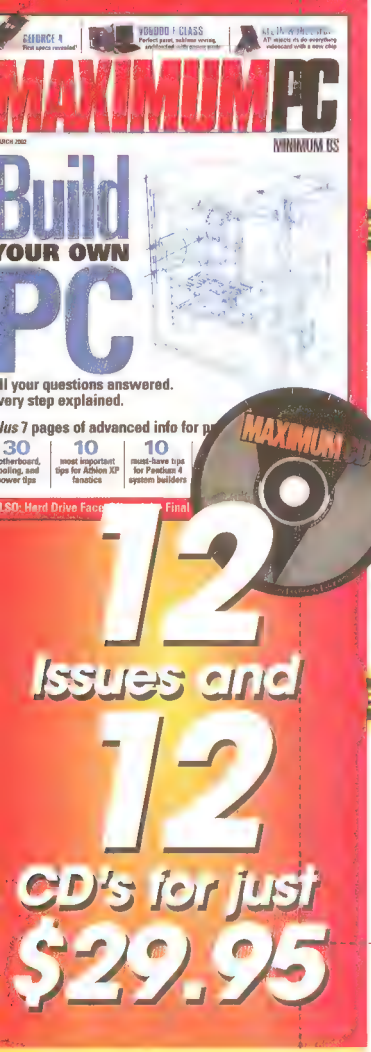
Mobility: Anyone remember Tim Conway's "shuffling old man" comedy act? He shuffled up a storm, taking about 700 steps a minute, but covered very little ground because his gait was so short. Well, AIBO's the same way, exerting loads of energy, but not moving very fast. On the flipside, the ERS-31L's head and four legs can move in three directions each, which gives the robot dog 15 degrees of freedom. This leads to a wide variety of motions and gestures, the best of which are more inventive (and human-like) than anything a real dog could come up with. Winner: Tie

Obedience: It's not that AIBO's disobedient. It's more like he's just a bit, well, dense. Or maybe temperamental. Regardless, he rarely responds to a command as soon as it's given, and oftentimes, depending on his mood, he'll outright reject instructions. For example, if you don't pet him enough, or even if you ignore him for just a few moments, he'll enter into "sad mode," and then refuse your requests to dance or sing. Winner: Real Live Pug

Sensory awareness: AIBO can hear sounds, and recognizes 75 words right out of the box. He can also see colors and movement, and is especially attracted to his bright pink ball, which he'll "chase down" and kick. The ERS-31L AIBO has one head sensor and four paw sensors that respond to touch, and is equipped with a rudimentary CMOS camera that will take dark, blurry pics of things that interest him. AIBO has no sense of smell, but he does express a wide variety of emotions (happiness, sadness, fear, dislike, surprise, and anger) in response to how he's treated. But let's be serious here: No robot dog designed in 2002 boasts the acute sensory awareness of man's best friend.
Winner: Real Live Pug

Care/feeding: The ERS-31L isn't a finicky eater. Just juice him up with his 16V AC adapter, and he'll do his funky groove thing (until he runs out of energy, which always seems to be quicker than 2.5 hours, his spec'd run-time). He won't tear up your toilet paper, he won't pee on the rug, and he won't get old and arthritic. Let's face it: AIBO is a lot less needy, and oftentimes much easier to live with, than a regular dog.
Winner: AIBO

Fun factor: AIBO has some irresistibly cute shtick—sort of like Japanese pop meets old-time vaudeville. His euphonic electronic utterances are adorable, and his dance moves are crowd pleasers for all ages. If you're lucky enough to get him into "happy mode" (which takes extensive positive reinforcement in the form of head pats and verbal encouragement), he'll go wild with an explosion of dance moves and melodies. Best of all, it takes only about 10 seconds to forget that AIBO isn't a sentient being. The flipside of this is that after about 20 more seconds, you remember he's just a robot. The best robot you've ever met, but still a robot.
Winner: Real Live Pug



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Intelligence/trainability: Pugs are trainable, especially if you lay down the law when they're puppies, but no real-world canine can pull off AIBO's coolest tricks. Frinstance: If you say, "Let's dance," AIBO will bust out any number of jigs, one of which looks like Travolta's number from *Saturday Night Fever*. If you say, "Sing a song," AIBO will start chiming away—anything from boogie-woogie to Okinawan melodies. And if you say, "Let's talk," AIBO will begin mimicking anything you speak (his voice is a bit reminiscent of R2D2's). Still, only a real dog is capable of quickly reacting to complex and unfamiliar sensory stimulation, so this battle goes to the flesh and blood. Winner: Real Live Pug

Care/feeding: Dogs require pricey medical services. AIBO does not. Dogs cause property damage. AIBO does not. Dogs eat lots of expensive food. AIBO does not (though he does require an electric charge if you want him to do anything besides sit like a bump on a log). AIBO constantly begs for attention with faint electronic whimpers, but he's a lot easier to ignore than a real dog, and is the perfect pup for small apartments and people who work 60 hours weekly (there's nothing sadder than a dog who's been deprived of human attention).
Winner: AIBO

Sensory awareness: We know a real dog that can find a single smelly, chewed-up tennis ball buried in a sea of ice plant. The very same dog can hear his owner's voice from 200 yards, and can see cats hiding in the bushes before the cats even know they've been made. When AIBO begins jumping around like a bucking bronco the moment he sees a can opener, then—and only then—will we award him this category. Winner: Real Live Pug

Mobility: OK, pugs aren't the most athletic of all dogs, but they can still roll around on their backs with the best of 'em, and jump for chew toys that are within their vertical leap. AIBO doesn't have this level of mobility. And even though pugs have short legs and were originally bred to be lap dogs, they can certainly scamper around much, much, *much* quicker than the ERS-31L AIBO. Finally, we're talking about real dogs here! Like any real dog, a pug can negotiate himself into nooks and crannies that are strictly off-limits to AIBO. That said, when a real dog can learn to dance hip-hop moves or correctly respond to a "karate chop" command, we'll award him a decisive win in this category. But for now... Winner: Tie

Obedience: Real dogs don't have AIBO's range of fancy tricks, but evolution has programmed them to be extremely effective pleasing machines. So when you say "shake," a properly trained real dog invariably shakes, 99 times out of 100. Same goes for all the other rudimentary commands you might throw at a real dog who's been properly socialized to follow the pecking order. Throw the ball, and he'll fetch it. He just doesn't know any other way. Winner: Real Live Pug

Fun factor: Let's say this up front. We're dog people at *Maximum PC*. Sure, we like cats. Hell, we like all animals. But we're dog people when it comes right down to it. Dogs are friendly, loyal, athletic, energetic, reliable, noble, and fun. AIBO's got a lot of good qualities, but if we had to pick a single sidekick for a lifetime of companionship, we'd take a real dog any day of the week. Winner: Real Live Pug

THE UPSHOT

Our ERS-31L AIBO won just a single battle in this head-to-head, but make no mistake, it's the best robot we've ever played with. AIBO's ability to react to human and environmental stimulation is astounding, and when it gets juiced up in "happy mode," the dog is more fun than an hour's worth of *Oz*. But sadly, like many electronic toys, AIBO gets a bit tedious after about 45 minutes of play. It doesn't have the enduring charm of a real live pug, and it just can't push the same emotional buttons.

However, if you're ready to throw down $600, and want one of the most unusual tech gadgets around, the ERS-31L will show you tricks you never even imagined.

God's Hand

May

Sculpt mountains, gouge valleys, seed forests, and bring forth animals to create a world all your own
Summon volcanoes, release tornados, and call down meteors and lightning

Create a world imagined only by you...

Build and run the

EVERYONE E CONTENT RATED BY ESRB

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PC CD ROM

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or's Limo

Your Sims

Deploy emergency vehicles and join in the action as they battle blazes, mobs and more

Connect a massive region of SimCities, each sharing and competing for resources

Place your sims in your city to get the inside scoop on what's going on around town

Feel the rhythm of the city: peaceful protests and rowdy riots, noontime crowds and nighttime calm

city of your dreams...

Immerse yourself in the lives of your Sims...

SIMCITY 4

EA GAMES

STOP SPAM DEAD!

Everything you always wanted to know about the scourge of the Internet. Where it's coming from, what's being done about it, and how to keep it out of your $#%@$! mailbox!

BY JASON COMPTON

INCREDIBLE INVESTMENT OPPORTUNITY IN NIGERIA!

HOT YOUNG AMATEURS ARE LOOKING FOR YOU!

GUARANTEED METHOD TO INCREASE THE SIZE OF YOUR...

Well, you get the idea.

If you use a computer, you know what spam is—and you hate it. We'd like to say that the government is taking action to prevent spammers from cramming our inboxes with scams that range from the insidious to the ridiculous. We'd like to think that legislation is coming to stop junk e-mail from chewing up bandwidth and mail server resources. But that hasn't happened yet.

In one published report, Microsoft stated that four out of five messages handled by its Hotmail servers are spam—and Hotmail has blocks to ditch far more than that before delivery! Similarly, the spam-filtering service provider Brightmail reported that it tracked more than 5 million "spam attacks" in August alone (one attack being a particular mailing incident, which could lead to hundreds of thousands of e-mails). One in 20 of the spam attacks was a flat-out scam. One in nine contained porn.

Spammers are getting sneakier and sneakier, and they're not going away. The ones with "legitimate" products to sell make their business model work by closing just a few sales to cover their spamming costs. And as for the rest? "Spam e-mail gives people the opportunity to get a fraudulent offer in front of millions of people for low cost," says Bryson Gordon, product line manager at McAfee.com. "The potential criminal payoff is enormous."

If you're *not* interested in increasing your bust size, and if you're not interested in checking out Jenna's sorority house web cam, and if you're *not* interested in helping Nigerian expatriates get back on their financial feet, then it's time to go to war. The following anti-spam handbook will show you how to prevent spam, and how to deal with the onslaught once you've been marked. We'll also introduce you to the wretched jerk who's behind a lot of the garbage.

It's time to fight back.

Illustrations by James Gary

Stopping Spam Before It Starts

An ounce of prevention? How about a pound of prevention? That's what it takes to keep your inbox out of the spammers' crosshairs. In this section, we give you the 10 best methods for throwing off the spammers *before* they find you. If you follow these instructions to the letter, you may never have to worry about the rest of this article.

On these two pages, you'll also see many references to e-mail filtering, which is explained in detail on page 32.

#1: Hide Your True Name

Keep your primary e-mail account (the one you pay for and cherish most) as invisible as possible. That means *never* using it to post to Usenet or web forums. And if you must use your primary account for communication with strangers, you should obscure your address with garbage characters, or call yourself something like **"jREMOVEMEsmith@REMOVEMEisp.com"** to prevent automatic e-mail scouring programs from catching you.

It also pays to never, ever sign up for anything with your primary e-mail address. Instead, you should use a spare e-mail address from your ISP if it provides one, or sign up for a free web e-mail account at Hotmail or Yahoo. Either way, it pays to have one e-mail address for doing occasional business, and another, more protected address for daily correspondence.

#2: Don't Open It

This is tough advice to follow, but if you see something that's clearly spam, try to avoid even opening it. Why? Because spammers know when you've opened their messages, and once they've identified your address as working and active, they'll spam you again and again. Opening spam can also drop cookies into your PC, and that's trouble as well. We must also note that if your e-mail reader's "message preview" mode shows you images or "HTML graphics," you can get nailed that way, too. So disable anything more elaborate than text previews to play it safe. Finally, avoid electronic greeting cards. Both senders and receivers open themselves up to spam.

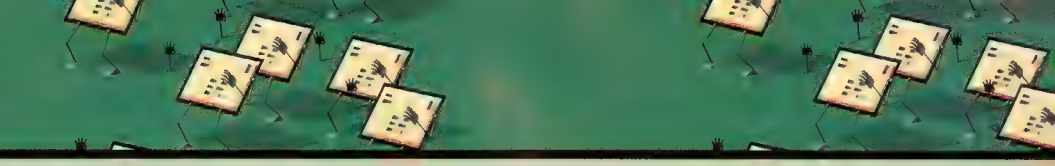
#3: Opt Out Now!

When you get an announcement concerning a company's privacy policy, call the provided 800 number and "opt out." This lets the company know that you don't want to share your personal data—including your e-mail address. Also, when a site with which you've voluntarily registered sends you an e-mail regarding privacy policy changes, pay close attention. It's not uncommon for a site to automatically opt you in to new types of information-sharing. Institutions like banks and insurance companies won't necessarily make opt-out procedures easy to find, so look closely at what may seem like benign mailings announcing new services. These e-mails may include opt-out information (legally mandatory in some states) buried in the fine print.

#4: To Remove or Not to Remove?

Conventional wisdom says you should never, ever send an obvious spammer a "remove request" because he or she will simply add your address to the list of active e-mail accounts ripe for spamming. We stand by this advice, but some spammers swear that they honor remove requests. Federal Trade Commission attorney Brian Huseman says the FTC conducted a test in which it sent out remove requests, and then monitored spam levels to see if they increased. Surprisingly, the testers did not get additional spam. They hardly got less, though, as 63 percent of the remove addresses were simply invalid!

If you're really eager to pick a fight, you can try busting someone who won't remove you. After its test, the FTC sent out more than 70 warning letters to the companies with bogus removal links. All of which leads us to…



#5: Tell the FTC

The Federal Trade Commission loves to get your spam. Send it to uce@ftc.gov. The Commission collects about 50,000 messages each day, and shares the profiles of spammers (and the spam they send) with other government agencies. The government folk can search the database, compare notes, and, hopefully, get around to shutting down the worst offenders.

#6: Contact the Right ISP

It often pays to contact the ISPs that host spammers—many have policies that prohibit dirty e-mailing deeds. You can typically get a spammer's ISP info by deconstructing a spam's e-mail header (see page 34 for details). When working with the spammer's ISP, remember to simply forward any spam you received. Do *not* use the "bounce message" or "redirect message" features of your e-mail client to forward the message unless specifically instructed to. You'll look like you're relaying spam. Also, your own ISP admins may want to see the spam as well. It will let them know that their server-side spam filters need updating.

#7: Alert Spoofing Victims

Unfortunately, professional mailing tools have made it easy to spoof (that is, forge) the "From" lines in e-mail messages. As a result, spammers will spoof the names of legitimate businesses to entice you to open up their junk: "Look, I got a letter from Flowers.com—it must be legit!"

However, in a satisfying twist of fate, Flowers.com (among other companies) has successfully sued spammers for fraudulently putting its name in "From" lines. So if you recognize that a message has clearly not come from the person or company noted in the "From" line, let them know about the spoofing ASAP. Make sure you explain that you're not blaming them for the spam, but rather, just trying to alert them to an attack on their name. It also helps to determine if the spoofed company has an Internet abuse e-mail address. If not, you can simply notify the appropriate webmaster.

#8: Don't Feed the Spammers

Even if the e-mail looks legit, and even if it's from a company you know other people have done business with, don't reward a spammer by buying his product. The spammer will probably pass along your valid e-mail address to yet another mailing list or company, and the spam nightmare will continue into perpetuity.

The best strategy is to buy the product from someone who *doesn't* assault you with spam. And if you truly must have the cheap toner cartridges or herbal Viagra pills, and the spammer is the only "retailer" that carries the product, then at least deny the clickthrough that says you're responding to the spam. Instead, visit the spammer's site the long way—visit the URL by typing its address in your web browser.

#9: Build a Mini-Black Hole

One approach to killing spam is to throw all of the e-mail from a known spammy ISP into a "black hole. You can do this by configuring your e-mail server (if you have your own) to automatically refuse to accept or relay that ISP's traffic. While hardcore "black hole" spam blocking is best left to your ISP, there are some nasty abusers you might want to block at the local level just to be safe. A good, reasonably concise list of chronic baddies is at **www.cluelessmailers.org/#blacklist**. The blacklist includes details of exactly what the spammers do, so you can make your own judgment about whether they deserve filtering.

#10: Start Building a Whitelist

Another drastic approach is to build a "whitelist"—a list of "safe" domain names and e-mail addresses that are allowed access by your e-mail program. Whitelist members are allowed past your e-mail filters, while all other ISP domain names and e-mail addresses are halted at the gate.

If matters ever get truly desperate, you can also filter e-mail traffic from anyone but your known friends. If you think you might possibly take this course sometime in the future, make sure that you always add "trusted senders" (and no one else) to your address book during the course of regular e-mail reading. This way, in the event that you do adopt a whitelist filter, you won't have to comb through a lifetime of e-mail to build it up.

Spam Filtering: How to Control the Flood

Prevention is all well and good, but the fact remains that unless you resort to the most extreme measures (such as whitelisting), you're still going to get spam. Spammers will stop at nothing to get your address. They'll even use flat-out guesswork, running huge lists of words into an address-generation program to build a list of likely e-mail addresses of a given ISP. Spammers also take common name and initial patterns, and then add numbers to them (joe43, missy040176) to hopefully find a heartbeat on the other side. Yes, they go to such lengths.

Luckily, your e-mail client has filters to help you solve the spam problem when basic prevention measures fail. Not all filters are created equal, but the basic idea is the same across the board.

First you define what you're looking for—for example, all e-mails with "Herbal Viagra" in the subject line. Next you tell the filter what to do about a suspicious message—you might delete it outright, or transfer it to a "suspicious" folder. This way, you can periodically review the quarantined messages to see if your filter junked something you actually want to receive. (For some odd reason, Gordon's e-mail filters always dump Katherine's messages into quarantine. Go figure.)

Virtually every e-mail program uses the same language for developing filtering rules. Some programs, such as *Outlook XP*, offer more choices for default rules than others, but there are really only two options you're interested in: filtering based on sender/header information (i.e., filtering out specific e-mail addresses or key words in subject lines), and filtering based on keywords found in a message's body content.

Let's take the first strategy. Some spammers actually play fair, and place the letters "ADV" (for "advertisement") in their subject lines. With your filtering tools, you can create a subject line rule that blocks all e-mail containing the phrase "ADV." Of course, not all spammers use this identifier, and you may even want to receive e-mail from some companies that do.

Some e-mail programs let you delete spam on the server level, rather than pulling it down and stuffing it into a separate mailbox marked "suspicious." This is a drastic strategy, however, and could end up making you feel rather foolish if your filter kills e-mail you actually wanted to read. That's why we recommend the "suspicious" folder approach. Browse it every few days to make sure you haven't missed an announcement about the end of the world, and if you find more than one "false positive" (an e-mail that's been mistakenly tagged as spam), it's time to re-evaluate your filters and find the common thread.

Be sparing in your use of keyword filters. If nothing else, you might miss out on a friend telling you about the hilarious spam he just got for a combination toenail fungus/genital enhancement cream.

The web-based Yahoo and Hotmail e-mail services let you filter according to specific words or senders, but the best use of your time will be to use the "This is Spam" and "This is not Spam" reporting features. By showing Yahoo and Hotmail what they let slip through (or what they accidentally blocked), you only improve their overall spam abatement program.

Finally, don't be disappointed if your filters fail to stop everything—even the words you're looking for. Filters can be defeated by sneaky HTML tricks, such as inserting do-nothing tags in the middle of words.

Spam's Worst Moments

The history of man's inhumanity to man via the parable of junk e-mail

THE VERY FIRST SPAM?
In May 1978, Digital (now a part of HP) sent out an e-mail invitation for a product demo to hundreds of Arpanet users. Most of the intended recipients never got the mail due to a glitch, but community reprisal was still sharp and furious. Arpanet bigwig Major Raymond Czahor even chastised the company in all caps.

IMMIGRATION! EVERYBODY FREEZE!
In 1994, the law firm of Canter & Siegel tried to boost sales with an alarmist spam announcing the impending end of the "Green Card Lottery," and inviting immigrants to turn to them for help. Although this was originally a Usenet spam, it lives on eight years later. While researching this story, we actually got a "US Greean Card For You" spam (note the clever spelling error to defeat simple spam filters).

TRASH TO TREASURE
Jeff Slaton—among the first to sell worthless crap online for real money—broke a lot of ground with his "atomic bomb schematics" spam, which he mercilessly pelted at individuals and mailing lists. The declassified docs from Los Alamos were basically free, but Slaton sold them for $18. Slaton might also have been the first to provide a bogus e-mail address for people who wanted to be removed from the spam list, and the first to proudly proclaim himself the "spam king."

CAPITALIZING ON TRAGEDY
On September 12, 2001, Opt-In Marketing Services blasted out a spam to "ask all our members to immediately give blood or money." The provided links to the Red Cross were legit, but 75 percent of the spam window was actually an ad for life insurance.

.USA IS NOT OK!
Shortly after 9/11, TLD Network Ltd. urged its spam recipients to "Be Patriotic!" and register .usa domain names for $59 a shot. Trouble was, the .usa domain never existed. It was all a scam. When the FTC shut down TLD earlier this year, it estimated that the company and its partners had pocketed over $1 million.

Creating a Spam Filter

Good hygiene for your e-mail client

Virtually all major e-mail clients, including online services such as Yahoo and Hotmail offer some kind of e-mail filtering. Most of the clients call them filters, but Microsoft had to be different, so it calls them "rules."

Because the process of creating e-mail filters is almost identical among all the clients, we're going to zoom in on the process of getting rid of those damn Viagra spams using *Outlook Express*. If you use *Outlook XP*, *Eudora*, or even *Netscape/Mozilla*, you'll still find the filters (or "rules") under the "Tools" menu in each application.

STEP 1

SELECT THE CONDITIONS FOR YOUR RULE

This is where we tell *Outlook* which e-mails to be concerned with. Because we don't want to accidentally filter out frantic e-mails from friends who, um, can't perform the way they used to, we're going to restrict filtering to just the subject line of the e-mail. After we checked the appropriate box ("Where the subject line contains..."), a "contains" hyperlink appeared in the Rule Description box. We then clicked the hyperlink, and typed the word "Viagra" into the target.

STEP 2

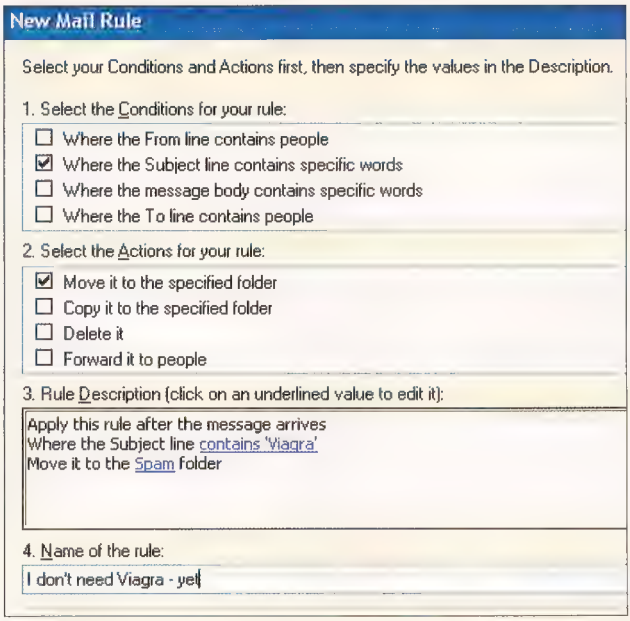
SELECT THE ACTIONS FOR YOUR RULE

Here's where we tell *Outlook* what to do with the e-mail it has intercepted. You can actually assign multiple actions to an e-mail. For instance, you could have the suspected spam forwarded to your IT department so they can tweak their filters to catch more spam, and then also have it deleted from your Inbox. Here, we've checked "Move it...," which brought up a hyperlink in the Rule Description box. In this hyperlink's target, we chose our Spam folder. At some point, we'll check this Spam folder to see if *Outlook* deleted valuable e-mail by mistake.

STEP 3

REMEMBER THE WHEREABOUTS OF YOUR RULE

Finally, we name the rule something recognizable, so that we can find, open, and edit it later to hone its accuracy, if need be. That's one spam rule down, and many more to go!


New Mail Rule
Select your Conditions and Actions first, then specify the values in the Description.
1. Select the Conditions for your rule:
Where the From line contains people
Where the Subject line contains specific words
Where the message body contains specific words
Where the To line contains people
2. Select the Actions for your rule:
Move it to the specified folder
Copy it to the specified folder
Delete it
Forward it to people
3. Rule Description (click on an underlined value to edit it):
Apply this rule after the message arrives
Where the Subject line contains 'Viagra'
Move it to the Spam folder
4. Name of the rule:
I don't need Viagra - yet

MailGuardian: Drastic But Effective

More spam protection than mere filters can provide

There are a number of commercial utilities that promise to excise spam from your life, but *MailGuardian* **(www.mailguardian.net)** is the best one we've tested. The combined one-two punch of *MailGuardian* and your e-mail client's own filtering system is the most comprehensive yet fault-tolerant approach we know of today.

Instead of scanning your e-mail for keywords or specific headers, *MailGuardian* checks the originating SMTP server for every e-mail you receive, and compares it with a constantly updated list of servers used by known spammers. A suspected spam message gets flagged as spam on *MailGuardian's* server before you ever see it, and a keyphrase is placed into the subject line of the e-mail. From that point on, it's easy to banish messages that *MailGuardian* flags as spam using your mail client's built-in filters. *MailGuardian* costs $30 a year, but that's a small price to pay to regain control of your Inbox.

Decoding E-mail Headers

Here's how to find—and bust—the people behind your spam

The last thing spammers want to do is make it easy for you to respond directly to them and pelt them with your rage, so they resort to all sorts of wicked chicanery to remain anonymous. But in doing so, they still have to go through a network that wasn't designed to help bulk e-mailers cover their tracks. By looking at your e-mail headers (which are, most of the time, conveniently hidden from view), you can often draw a bead on the offenders, and then report them to their ISPs.

To see the full message headers that accompany every single piece of e-mail, you can select View/Options in *Outlook XP*; Properties/Details in *Outlook Express*; and View/Headers-All in *Mozilla/Netscape*.

Now, let's take a look at a piece of spam to root out the source. Names and IP addresses have been changed to protect the innocent and not-so-innocent. ■

1 The **From** line in almost any spam is a big fat lie. It's very easy for a spammer to manipulate this information in a message header, so pay no attention to the addresses in this field. The From line here is trying to make us believe that the e-mail originated at Yahoo, AOL, or maybe the Communist Party. It's hard to tell. Needless to say, Yahoo and AOL would have detected—and put the kibosh on—this type of bulk mailing frenzy.

2 The **Reply-To:** address is also easily forged, so don't pay this any mind either. The truth is that this message didn't originate anywhere near an AOL server, so complaining to America's favorite coaster supplier won't help.

3 Here's where we begin making some useful headway: In the **Received: from** portion of the e-mail header, pay attention to the bracketed IP address—this is the address of the mail server from which the spam actually originated. If the spammers had forged their IP address, we'd know it because the first IP address in the field (the one immediately after the "Received from" statement) and the IP address in the brackets wouldn't match. The spammers in this example didn't go that far, though they could have.

Please note: If there are multiple Received: from lines, the one at the bottom is typically the originating e-mail server. Keep in mind that this could be either a willing spam host, or an open e-mail relay exploited by a spammer.

```
From yahoo.commustant@aol.com
Reply-To: <mercedes@yahoo.commustant@aol.com>
Subject: Give Away FREE CD's - Earn $5K in 30 Days!
From mercedes@yahoo.commustant@aol.com Sun Sep 15 18:00 CDT 2002
Received: from 200-168-138-148.dsl.telesp.net.br (200-168-138-
148.dsl.telesp.net
.br [200.168.138.148]) by mail.xnet.com (8.9.3+Sun/XNet-3.0R)
with SMTP id SAA22
218 for <jbcompton4853@xnet.com>; Sun, 15 Sep 2002 18:00:07 -
0500 (CDT)
```

4 Using Geektools WHOIS (**www.geektools.com/cgi-bin/proxy.cgi**), we can get the skinny on the people running the mail server at the 200.168.138.148 IP address. It turns out that this address is registered to "Comite Gestor da Internet no Brasil" of Sao Paolo.

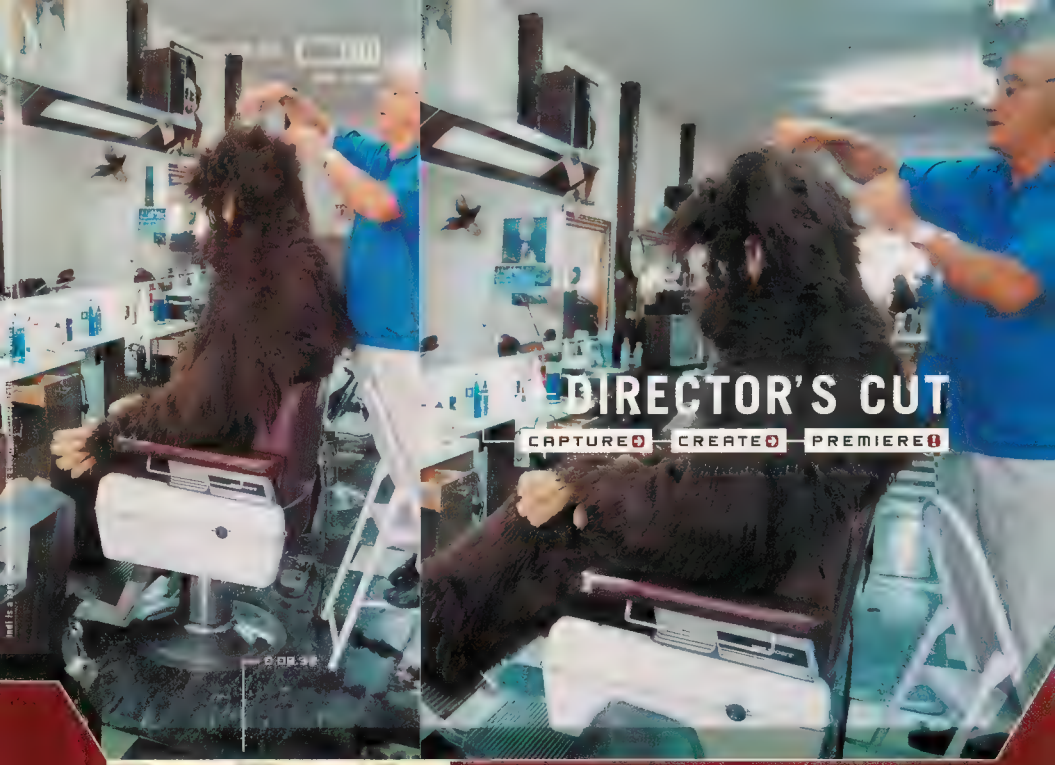
Comite Gestor da Internet no Brasil appears to be an official governing body, and not the ISP that actually sent this spam, so we're going to look up the other address found in the header, again using WHOIS.

By entering "dsl.telesp.net.br" into the WHOIS engine, we got what appears to be an actual ISP: TELECOMUNICACÕES DE SAO PAULO S/A –TELESP. And lo and behold, at the bottom of its page, WHOIS shows that the ISP has a mailbox for reporting "mail abuse." It's this e-mail address that's going to receive our complaint message.

5 Now we're going to forward the spam headers to the ISP's mail abuse address, along with a polite word that the unsolicited spam appears to come from the ISP's server. The spam may have been sent by a legitimate ISP customer, or it may have been the result of mail relay server abuse. Regardless, simply ask the ISP to curtail the spam. Be succinct. Abuse desks are busy, so get right to the point.

6 Another good spam-identifying tool is *nslookup*, which tells you the domain name behind an IP address (in this case, dsl.telesp.net.br). We also like *tracert*, which can help track down the larger ISPs that serve spammers by showing you where they connect. This can be helpful to find countries of origin for spammers using ".com" addresses. Windows includes both programs; just use your "Run" command.

If you want to know more about the how and why of spam hunting, hit **www.claws-and-paws.com/spam-l/tracking.html**, which also contains web interfaces for tracing and tracking mail abusers.



iNdiDVD | TDK

With a TDK Indi DVD burner and DVD recording media, creating videos and photo slideshows is simple and fun. Add music, narration and sound effects to give your Big Footage a fresh cut. Quickly create your own Hollywood style DVD, back up data and more. Records DVD and CD discs.

Discover the whole Indi DVD story at www.tdk.com, The Digital Sweetspot™.

Charting the Spamdemic

The conspiracy is vast, but not invisible

In a single, sweeping 4470x2926 EPS file, Bob West has charted the global spam conspiracy's massive size and complexity, linking one offender to another in the ultimate flowchart of treachery and deceit. West's creation is called the Spamdemic Map (available for download at **www.cluelessmailers.org**), and it shines a bright light on companies and organizations that would probably prefer to operate in the shadows.

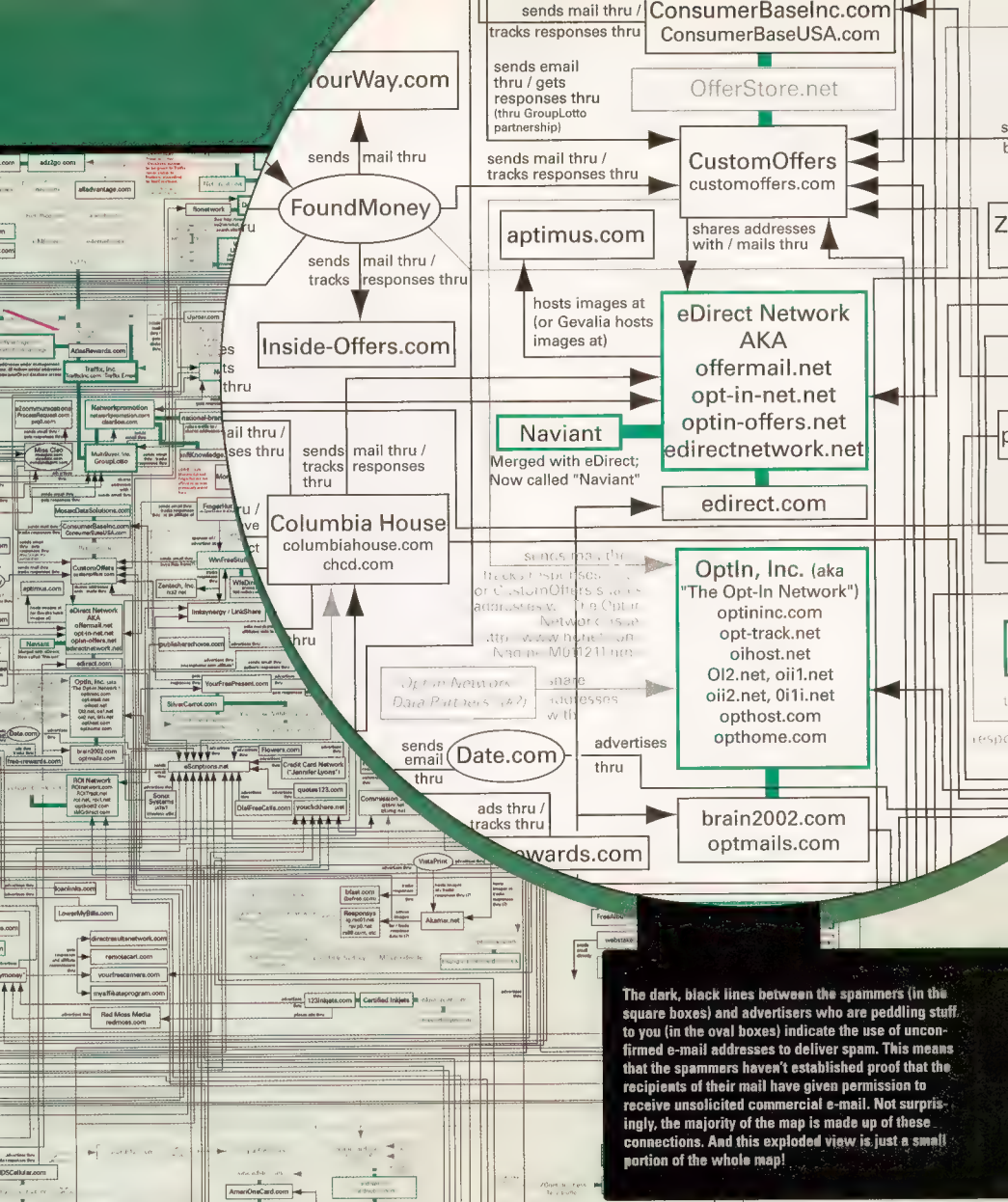
Spam emerges from a vast web of partnerships that includes not just the spammers themselves, but also advertisers desperate to sell goods, marketing agencies determined to make commissions, and ISPs that provide bandwidth to rogue spammers. What all these institutions have in common, however, is a rapacious appetite for e-mail addresses, and many are willing to turn a blind eye to addresses that may have been collected without their owners' permission.

"[The map] is meant to serve as a warning to mailers, marketers, advertisers, and e-mail users as to the potential for abuse when unconfirmed addresses are used in marketing," says West. The cartographer contends that while spammers may trust their address suppliers to provide legitimate e-mail addresses that have been gathered with users' permission, the true source of those names could be quite shady.

"Although lots of spammers try to hide their associations," says West, "others proudly name their 'marketing partners'—in other words, those with whom they buy or sell your personal information, often without your permission." These "marketing partners" could include your bank, your grocery store (did you sign up for that "Super Saver" card?), and anyone else who happens to know where to find you online.

"*Adobe Illustrator*, a little research, and lots of caffeine" are the map's foundation. West makes liberal use of IP (domain name) owner lookups to draw connections for the map, but a great deal of his information simply comes straight from the spammers themselves.

So before you give your e-mail away to a seemingly legitimate firm, check the Spandemic Map. You never know who might be slipping it to a clueless mailer.



The dark, black lines between the spammers (in the square boxes) and advertisers who are peddling stuff to you (in the oval boxes) indicate the use of unconfirmed e-mail addresses to deliver spam. This means that the spammers haven't established proof that the recipients of their mail have given permission to receive unsolicited commercial e-mail. Not surprisingly, the majority of the map is made up of these connections. And this exploded view is just a small portion of the whole map!

The Appalling Face of Spam

His name is Ronald "The Spam King" Scelson, and he's getting rich by stuffing your inbox full of crap

He says he won't send you outright porn or promotions from "multilevel" marketers running pyramid schemes. But if you've been pestered to buy life insurance, satellite TV, or a "cell phone booster" lately, chances are pretty good that Ronald Scelson of Slidell, LA sent you the spam.

Since the late 1990s, Scelson has made a very comfortable living blasting your mailbox—again and again and again—with ads for travel, sex toys, and whatever else someone will give him $1,000 a day to push. Scelson says that when he ran a company called (of all things) Opt-in Marketing, he sent more spam than any other person in the country. Unrepentant boasts like these are what have earned him the title of "Spam King," and made him the target of anti-spam activists.

"We told the world who our company was, gave a phone number, and four different ways to be removed, but all this did was give the anti-spam groups like Spamhaus and Spamcop easy ways to track us." Scelson says the anti-spam advocates jumped on the ISPs running his removal servers, and threatened to blacklist their domains if they didn't shut him down. This led to multiple disconnections by major ISPs. And those disconnections added up to months and months of lost revenue for his business, and mounting bills from ISPs that continued to charge him for the pipes he installed—but couldn't use—for spam.

So no more Mr. Nice Guy, Scelson says. He left the day-to-day operations of Opt-In Marketing behind, and now operates under his own banner as an unabashed spammer, pulling every dirty trick in the book to deliver his e-mail.

"I don't frankly care; I'll break every rule there is to break," he says. "I will relay-rape, go through proxy servers and spoof them, I will spoof IP addresses. I will do everything I can for them not to find me to shut me down. I can stay up like this for years, and they'll never totally lock on to me." (Lest there be any questions, online jargon dictionaries define relay-raping as, "The hijacking of a third party's unsecured mail server to deliver spam.")

Scelson says he has yet to be brought to trial for anything, and he even wriggled out of one lawsuit because, under Louisiana state law, he didn't meet the volume requirements of a particular statute, which stipulated that an illegal spammer had to send thousands of e-mails at a time. Although each of his 20 servers can blast out 5MB of spam in a second, they send just one e-mail at a time each over a DS3 pipe. Score one for loopholes.

Scelson claims a database of 130 million e-mail addresses, some of which he buys, and some of which he pulls directly from online directories. Nevertheless, Scelson says he processes remove requests on a weekly basis, and applies opt-outs to all of his advertising clients, and that he spams only "public e-mail accounts," not private domain names or corporate e-mail. "If you're Hotmail, Juno, BellSouth, AOL—those accounts are going to receive bulk e-mail," he says.

The Spam King says he would welcome legislation that sets ground rules for spam, as long as ISPs and filter operators have to play fair as well. "California passed a law that you have to have 'ADV' in the subject line [of spam]. This is great. Individuals can filter 'ADV' and not get junk mail from us," he says.

Nonetheless, Scelson says he thumbs his nose at the statute, because some ISPs simply block all e-mail tagged with "ADV."

"At that point," he says, "how do you expect me to honor that law?"

Thanks to vigilante activists, Scelson says he's on virtually every spam list known to man, but he likes it: "I've gotten some of my best products and clients thanks to that." He says he regularly receives death threats, and industry allies like the Direct Marketing Association and Privacy Consortium don't lend him a hand.

"Is it the right way to mail, using other people's resources? Absolutely not. But [anti-spam advocates] tried to put me out of business because of doing it the right way," Scelson says. The Spam King says he will continue with his underhanded ways until forced to do otherwise. "In five years, I'll be even richer than I am now." ■

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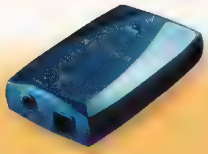

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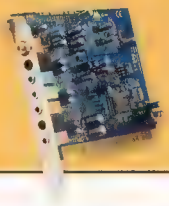

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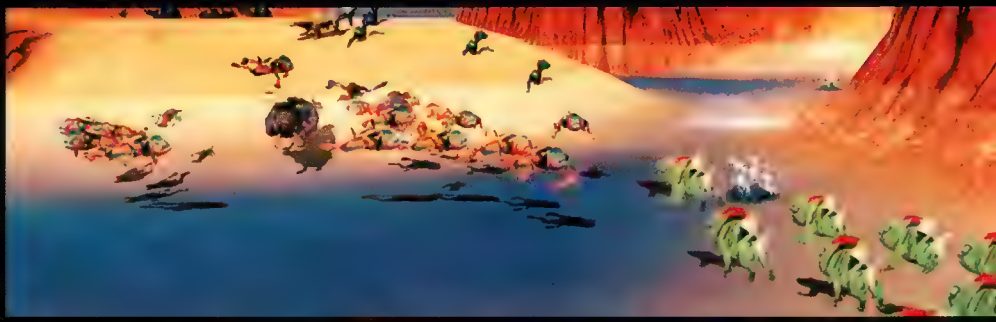
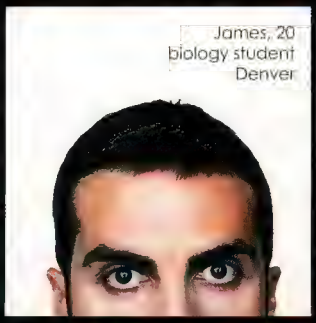




James, 20
biology student
Denver

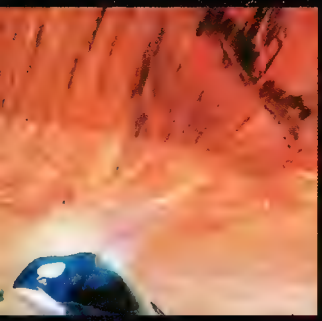
Jessie the Kid let's face it. The only good Pirawolf is a dead Pirawolf.

You need to have balance. A good air combat squadron of Vulturesharks, plus a battalion of Hyenadragons, and finally, Turtlelions for the amphibious fights. "Snakes and snails with scorpion tails." These are what real men are made of.

Tommy, 23
computer programmer
San Francisco

TEEN
T
CONTENT RATED BY ESRB
Violence
Comic Mischief
Microsoft game studios
relic

BY AN ARMY OF PIRAWOLVES WOLF).... WHAT WILL YOU DO?

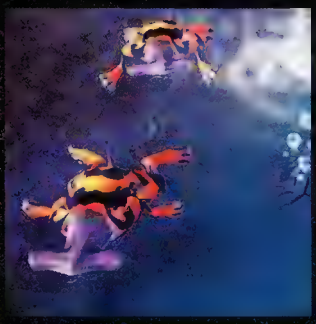


cjm1565: send in my goons. Eagorillas and Rhinobulls.

These boys will punish anything. If the French had them, they wouldn't have needed us in WWII.

END OF STORY, BIZATCH!

Craig, 22
pro skateboarder/slacker
Providence



Tank Talk: let's just say,

MAJOR PAIN IN THE...;)

A Tigebra is pretty wicked, or a Tiganzee. Haven't tried a tiger and a rhino yet.

My bet is it terminates with extreme prejudice. I like that.

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THE UNUSUAL SUSPECTS

Just in case you missed one of our prior rants about why buying a good case is just as important as getting the fastest processor or videocard, it's time for a revelation: The perfect case doesn't just give you precious room for the components you have now and the parts you intend to add in the future, it can also extend the life of those components by allowing for proper airflow even under the most brutal conditions.

A good case can also extend *your* life if it's equipped with features that minimize heart attack–inducing frustration. Drive rails can be a godsend if you frequently swap out your optical drives, and front-mounted USB and FireWire ports are nice for avoiding unpleasant trips underneath your desk.

Your valuable components deserve a quality home—and we're here to help you find one. In this roundup, we've gathered seven cases at prices ranging from half a Benjamin to half a paycheck. Some are spartan enclosures with just a few advanced features, while others sport Mercedes Benz–class amenities (and price tags to match).

With such a wide variety of cases, we had our work cut out for us in establishing review criteria, but we ultimately came up with six points of evaluation:

BUILD QUALITY. Is the case structur

SEVEN cutting-edge PC cases line up for interrogation. We subject them all to brutal questioning, and full body-cavity searches.

SO who's the leader of the gang?

ally sound and made of the best possible materials? Are sharp edges folded back or at least blunted for safety?

THOUGHTFUL AMENITIES. Does the case feature drive rails, front-panel I/O connectors, extra fan mounts, and a removable motherboard tray?

UPGRADEABILITY. How many drive bays? Are all areas of the interior easy to access? Can a wide range of motherboard sizes be accommodated?

BUNDLED-IN EXTRAS. Does the case come with a high-quality power supply? What about cooling fans, case windows, and other hardcore doohickeys?

APPEARANCE. All utilitarian concerns aside, how does the case look as a piece of industrial art?

PRICE. Will you be getting your money's worth?

The perfect case might look like a dastardly rogue from the outside, so we didn't let appearance weigh too heavily on our final review verdicts. We also didn't pay much attention to high prices—the magazine is called *Maximum PC*, not *Sub-Compact Econo PC*. But we did give each PC enclosure the first degree, so let's see how each one held up under intense editorial pressure.

—OMEED CHANDRA

Antec PLUS1080AMG

A serious case built for serious folks

Some vendors like to pimp tricked-out towers with sexy exteriors and exotic cooling, but Antec sticks to a tried-and-true, functional design. The PLUS1080AMG is the Toyota Camry of cases: It's thoughtfully designed and exceptionally well-made, but lacks the glitz of some of its pricier competitors.

One of this tower's best attributes is its industrial-strength construction—you can sit on the 1mm-thick galvanized steel without squashing it like a tin can (this is where the "intense editorial pressure" comes into play). Cooling is provided courtesy of two rear fans and one side fan, and there are mounts for extra blowers in the front of the case and next to the hard drives. Antec also had the presence of mind to install a filter on the PLUS1080AMG's front air-intake and a wire loom on the ATX power cable, both of which are important but often overlooked features. The aforementioned power cable is attached to a beefy 430-watt Antec TruePower power supply. One FireWire and two USB ports provide front-panel I/O.

The edges of the case are folded, so there's no danger of slicing open your thumb while installing a new videocard. The drive-bay roll call includes four 5.25-inch bays, two external 3.5-inch bays, and four internal 3.5-inch bays in a pop-out cage. Screw-on drive rails are included, and unused rails can be strapped to the floor of the case so they don't get lost. Unfortunately, the PLUS1080AMG uses standard screws instead of convenient thumbscrews, and the motherboard tray is non-removable. And while we thought everyone had that reset switch thing figured out by now, the PLUS1080AMG's is too small to press with your finger. OK, *our* fat fingers. Anyway, this enclosure from Antec is an excellent case for those sober types who believe form follows function.

FireWire; filtered front vent

SECRET SERVICE: Excellent build quality and power supply; front-mounted

SELECTIVE SERVICE: A nonremovable mobo tray; standard screws instead of thumbscrews; and a miniscule reset switch.

MAXIMUMPC VERDICT: 8

PLUS1080AMG
Antec, www.antec-inc.com, $160 (PSU included)

Atech AFT 6551

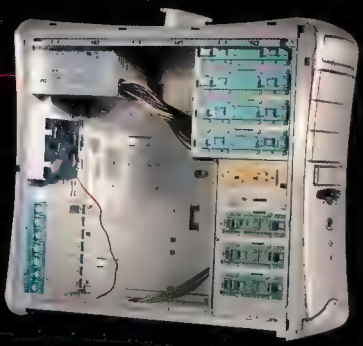
Mac Attack

We like the design of Apple's G4 tower cases, so we were intrigued by the AFT 6551's strikingly similar appearance. Sadly, this enclosure doesn't feature the same clever fold-out interior design that makes the G4 case so upgrade-friendly (and we all know how much Mac users love to upgrade their machines). Instead, the side panel detaches just like an ordinary case. But this minor letdown pales in comparison to the other qualms we have about this case from Atechflash.

The AFT 6551 certainly made a poor first impression. When we hoisted the case out of its box, numerous editors clustered around to comment on its cool design. But amid this praise, the plastic back panel one of us was holding onto broke off—a bad sign, indeed. Upon opening the case, we were initially pleased to see features such as drive rails and a screwless locking system for expansion cards. Unfortunately, both are poorly implemented. The drive rail system allows drives to wobble slightly even when locked in, and the flimsy expansion card locking system was the second part of the case we broke during perfectly normal use. Meanwhile, although the main side panel is secured with a thumbscrew, the other side panel can't be removed at all.

Not everything about the AFT 6551 is bad. The metal edges of the case are folded to protect your pretty little hands, and the front panel offers both USB and FireWire connections. A rear exhaust fan is provided, as are mounts for a hard drive fan. The included 330-watt power supply is a no-name unit, and we can't attest to its quality, but it's nice that Atechflash threw one in anyway. And one of the 5.25-inch drive bays comes with an optical drive faceplate that matches the rest of the case. This is a nice touch, but we wish more than just one bay had this.

The AFT 6551 also includes a carrying handle, which is nice for toting the case to LAN parties. That said, given the dubious quality of the case, it's easy to picture Senior Editor Gordon Mah Ung frantically chasing it down the stairs after the handle breaks off. Perhaps the AFT 6551 offers the complete Mac experience after all: It's perfect for people who never open their system or do anything with it.



MCINTOSH APPLES: Looks nice and has a front-panel FireWire port. The carrying handle is cool too.

APPLE MACINTOSH: Self-destructible features; no removable mobo tray; flimsy drive rails and expansion locking system; dubious power supply.

MAXIMUMPC VERDICT: 5

AFT 6551, Atechflash, www.atechflash.com, $180 (PSU included)

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SkyHawk MSR-4611 Mini-Server

Inexpensive, cool, and refreshing

In handsome 1.2mm aluminum trim, the SkyHawk bears a striking resemblance to the Cooler Master ATC-101, but costs a lot less money. The enclosure also includes a host of comfy amenities, such as a slide-out motherboard cage that's virtually identical to the one in the ATC-101. Thumbscrews are included for both side panels and all the expansion slots. And, in a bid to outdo the competition, SkyHawk folded most of the metal edges of this case, something Cooler Master doesn't do.

When it comes to cooling, the Eagle soars above and beyond most of its rivals. There are two fans mounted on the side panel, one at the rear of the case, and two filtered blowers at the front. And though the ATC-101 has more drive bays, the Eagle still has enough, with four 5.25-inch bays, three internal 3.5-inch bays, and two external 3.5-inch bays. Unfortunately, drive rails are not included.

Despite its niceties, this low-priced enclosure does sacrifice a lot to the Cooler Master. Although this SkyHawk is reasonably well-built, it doesn't match the high quality standards of the ATC-101. For example, there's a convenient pull handle attached to each side panel, but our MSR-4611 model arrived with one handle already unattached. We also felt that general build quality was just a bit less confidence-inspiring than the Cooler Master. And while most of SkyHawk's cases come with front-panel I/O connectors, our model didn't. Add in the fact that the bundle is altogether devoid of instructions, and you have a rather budget affair. Still, on the whole, this nice, frosty case delivers many of the ATC-101's features at a significantly lower price.

BALD EAGLE: Looks good, and includes slide-out mobo cage and tons of fans including filtered front blowers.

CLUBFOOT PIGEON: No drive rails or front panel I/O connectors. Somewhat dubious build quality.

MAXIMUMPC VERDICT: 7

MSR-4611 Mini-Server Case, SkyHawk, www.skyhawkusa.com, $90 (PSU not included)

AMS gTower

A big dock for your dual proc

The gTower is one of three cases in this roundup to feature an aluminum exterior, but has a slightly more distinguished look thanks to the front bezel's clear plastic exoskeleton. The jury is out on this tower's appearance: Some of the editors thought it was attractive, while others turned up their noses at its ornate silver rivets. Fortunately, aesthetics is one of the few areas in which the gTower can be challenged.

AMS tossed in all the expected amenities. The metal edges are folded to protect against mayhem, and thumbscrews are provided for the side panels and every add-in card slot. Cooling duties are handled by a large, 120mm exhaust fan mounted at the rear of the case and a smaller fan located in front. The gTower boasts a better set of front panel I/O options than most of the competition, serving up two USB ports, one FireWire port, and audio jacks for headphones and a microphone. And here's a nice touch: The power and reset buttons are easy to depress, but difficult to do so by accident. The included instructions are slightly above-average in quality (though that's not saying much for this roundup).

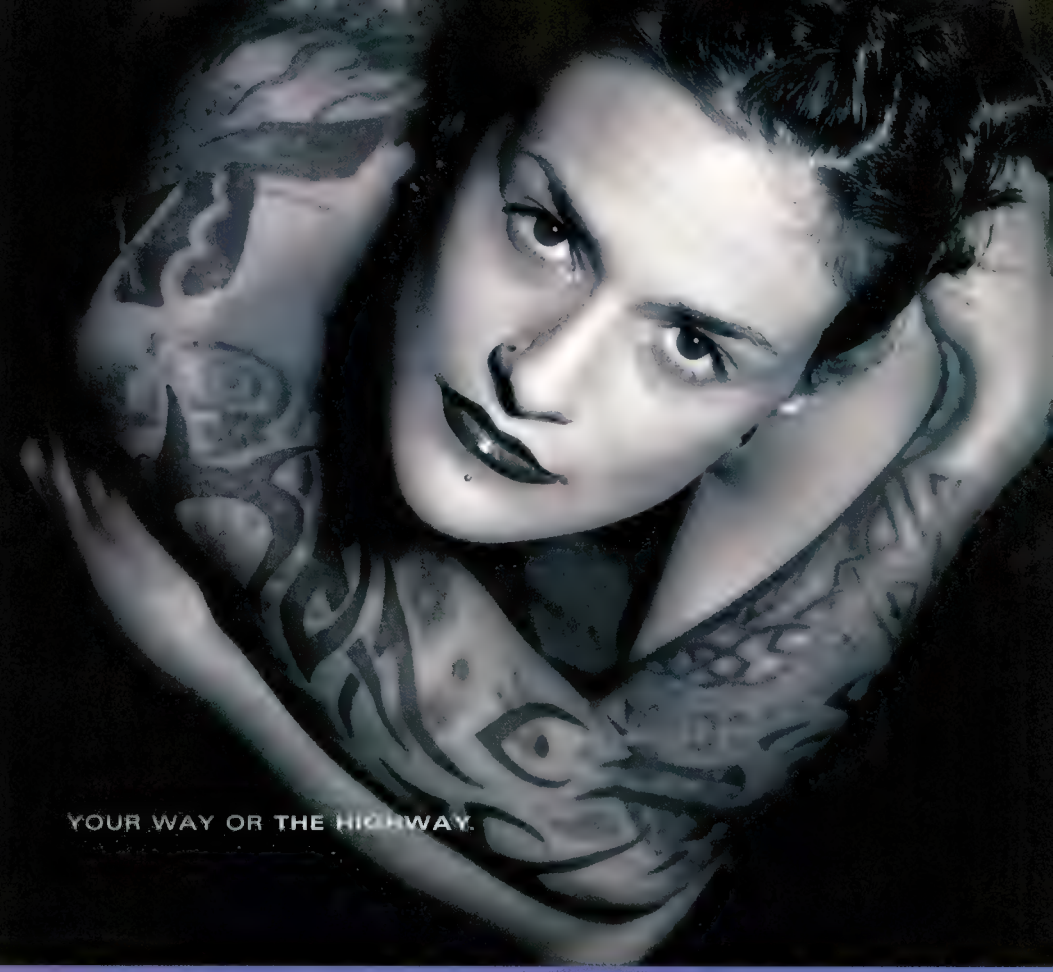
Frothing at the mouth for some dual-processor loving? Unlike the other cases in this roundup, the gTower will actually accommodate some full-size ATX motherboards. AMS didn't provide a removable mobo tray, so sliding in our Tyan Athlon MP board was a delicate operation, but successful nonetheless. PC Power zealots will also be pleased by the gTower's array of drive bays, which includes three external and four internal 3.5-inch bays, as well as four 5.25-inchers. However, if you require drive rails, you'll have to look elsewhere. Build quality is good, but we found it curiously difficult to remove the side panel from the case. Other than that, we don't have much to complain about. In most areas, the gTower excels, and many people find its unique appearance to be just what they're looking for (an acrylic side panel can be purchased as an option).

LAN PARTIES: FireWire, headphone, and microphone jacks on the front; fits full-size ATX motherboards.

LAN ORGIES: No drive rails or removable motherboard tray; quality could be better.

MAXIMUMPC VERDICT: 7

gTower, AMS, www.amselectronics.com, $170 (PSU and acrylic side panel not included)



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Enermax CS-5190AL

Get on the fanbus

To get a leg up in the dog-eat-dog case market, Enermax went out on a limb to differentiate the CS-5190AL with some unusual features. The cooling setup is definitely the best in this roundup. Two small rear fans are supplemented by a massive 120mm side fan, an 80mm hard drive fan, and an 80mm front blower. The latter three fans are attached to a fanbus, so you can adjust their speeds at will—an awesome feature. Mounts are provided for additional hard drive and side fans, and there's even a built-in thermometer!

Front panel I/O is another area in which the CS-5190AL excels. In addition to USB and FireWire ports, Enermax tosses in a full set of audio jacks, a volume control slider, and even a gameport. All of these ports hook up to the back of your system, rather than plugging into motherboard headers. Ardent upgraders will appreciate the case's four 5.25-inch bays, and its three internal and three external 3.5-inch drive bays (one external bay is occupied by the fanbus). The entire front panel is covered by thick acrylic.

Despite all the cool extras Enermax crammed into the case, it's lacking in a few basic areas. The side panels don't lock into grooves, so you must hold onto them with one hand while operating a screwdriver with the other hand. Making things worse, each panel is secured by no fewer than *four* large, flat-head screws that—trust us—can't easily be removed by hand. Having removed and reinstalled the side panels several times during the course of evaluation, we cannot overemphasize how friggin' annoying this design is. The CS-5190AL offers a slide-out mobo cage, but on our unit, the screws holding it in were jammed so tight, we were completely unable to remove them. Additionally, the assembly that holds the 120mm fan must be removed if you want reasonable access to the mobo.

As for its unique slanted design, some editors were smitten, but most of us thought it was too 1980s. Finally, to maintain an even plane with the front bezel, your drives will slide in at a slant, and this may not be good for reliable, long-term operation.

SAN FRANCISCO BAY: Great cooling setup including a thermometer and fanbus; oodles of front panel I/O connectors; sturdy.

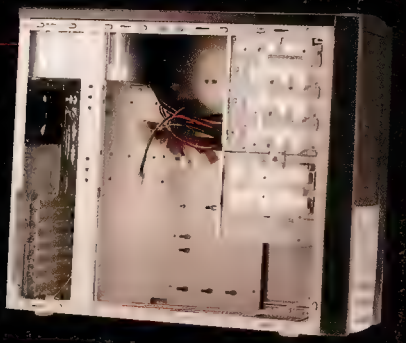
GUANTANAMO BAY: Crappy side-panel design; not-so-removable removable motherboard cage; somewhat gaudy looks with angled exterior drive bays.

MAXIMUMPC VERDICT: 7

CS-5190AL, Enermax, www.enermax.com.tw, $400 (PSU not included)

Lite-On MT950

Inexpensive but lite on features



Lite-On's MT950 offers a budget option for people who don't need lots of exotic features. At a mere $48 (and that includes a 300W PSU), this tower is one-eighth as expensive as the Enermax—so what accounts for the price difference? Well, for one thing, the power supply is a cheapo from an unknown vendor called Sun Cheer.

The basic design is nothing special. Two humble USB ports comprise the front panel I/O. Thumbscrews are included for the primary side panel, but not for the other side panel or the expansion slots. A rear exhaust fan is included, which is a nice bonus at this price point, and the metal edges of the case are folded, so you won't have to spend money on skin grafts at a later date. It bears mentioning that the Lite-On is smaller than all the other cases in this roundup. While this is good for, uh, cozy environments, keep in mind it also means less room to work with when monkeying around inside.

The MT950 offers two external and two internal 3.5-inch drive bays, as well as four 5.25-inch bays. Drives are held firmly in place by a sturdy drive rail system that doesn't allow for any wobbling around. However, there are no drive rails for the internal 3.5-inch bays, so hard drives must be secured with screws, the old-fashioned way. Even worse, hard drives can't be installed in the external 3.5-inch bays, because the drive rail system doesn't work with hard drives. Clearly, the MT950 is not without its flaws. But when you're getting a case, fan, and power supply for the price of just a good power supply alone, an enclosure like this merits respect.

V8 ENGINES: Includes drive rails and front-panel USB. It's dirt-cheap, too.

V8 JUICE: Drive rails don't work on hard drives, the PSU is suspect, and the whole affair is small.

MAXIMUMPC VERDICT: 7

MT950, Lite-On, www.loeusa.com, $48 (PSU included)

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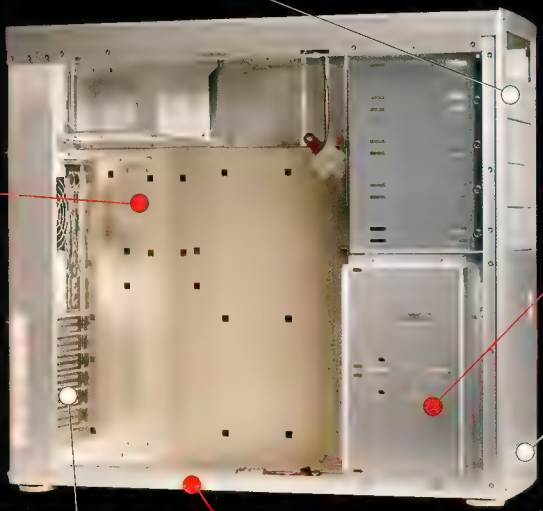
MAXIMUM PC KICK ASS PRODUCT

The King of Cool

TEN-CAR GARAGE: Full-tower server cases always provide more than just five 5.25-inch drive bays, but when you don't have the room for a skyscraper under your desk, five open bays will do. You can still fit a CD-ROM, CD-RW, DVD-RW, and Creative Live! Drive, with a bay to spare. For your wee drives, there's one external 3.5-inch bay, and four internal bays for that RAID array you've been planning.



MOBO MANEUVERABILITY: The ATX-compatible motherboard tray slides out effortlessly after you undo the five thumbscrews that lock it down—nice for avoiding potentially hairy motherboard upgrades. Unlike the first generation of removable trays, the Cooler Master trays are designed to accommodate the huge fans and heatsinks on modern CPUs. As the tray slides out, so does most of the back panel, so your cooling setup doesn't bang its head during egress.

THAR SHE BLOWS: Intake duty is handled by an 80mm fan positioned at the bottom of the case. The clever diagonal placement shaves decibels off the overall sound output by directing fan buzz at your carpet, while pulling the coolest air possible up and into your rig. One output fan is positioned in the standard rear position, while the other is intelligently positioned like a blowhole to evacuate hot air from right where it gathers.

OUTTA SIGHT: Front-mounted USB ports should appeal to anyone who wants to avoid crawling underneath a desk and fighting armies of dust bunnies. Achoo! But don't worry about an unsightly port marring the Cooler Master's picture-perfect facade, because both ports are hidden behind a tiny aluminum door.

YOU'RE ALL THUMBS: Cooler Master not only uses thumbscrews for its side panels, but also for PCI slots and the removable motherboard tray. This makes it easy to swap add-in cards during your bimonthly upgrading wars with the Joneses. Keep those components up to date!

ALL-ALUMINUM, ALL THE TIME: It's sleek and it's light, and because it's made of aluminum, the ATC-101 is also the biggest heatsink in your whole system. That's right: Cooler Master says the aluminum actually wicks away heat from the entire system. Granted, it's not the only aluminum case in our line-up, but Cooler Master's sculptors did a fine job with the material at hand.

With its metallic design and optional Plexiglas case window, the Cooler Master ATC-101 is as sleek and slick as an international jewel thief. However, careful scrutiny reveals that there's a lot more to the ATC-101 than just its sophisticated appearance. This enclosure might be pretty, but it's also ready to perform under pressure.

The case comes bundled with a nice load-out of fans, which isn't surprising considering Cooler Master's vast experience with cooling apparatus. We're particularly fond of the tilt-adjustable front blower that draws in air from the floor vents, and directs it over the PCI slots. Basic front panel I/O comes courtesy of two USB ports, and thumbscrews are provided for the side panels, as well as every expansion slot. Quibbles? The edges of the case aren't particularly sharp, but we'd still prefer folded edges. We've also grown quite fond of drive rails, so we were disappointed that the ATC-101 lacks them. And, as with all the cases reviewed here, the threadbare instructions are downright pitiful. But these are minor gripes in light of all the Cooler Master's perks. All in all, this is one sweet enclosure, and it provides perfectly flat surfaces for creative panel painting.

EXCITEMENT: Slide-out mobo cage, tilt-adjustable front fan, and an attractive design.

INDICTMENT: No drive rails, and the edges of the case aren't folded.

MAXIMUMPC VERDICT: 8

ATC-101 Cooler Master, www.coolermaster.com, $300

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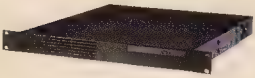

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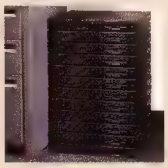

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- 14.1" XGA TFT Display
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A celebration of our favorite applications and utilities of 2002

For reasons unknown, Tech Editor Will Smith showed up to the ceremony in a white dinner jacket. Nice gesture, Will, but this awards presentation is strictly T-shirts and jeans—just a bunch of regular guys (and one regular gal) describing the absolute best pieces of software they've used in the last 12 months.

Maximum PC is primarily a hardware magazine. We deal in circuits, silicon, and solder. But there's more to life than just building systems up and then breaking them down. The software universe is vast and varied, and, yes, we do sometimes launch executables that weren't developed by gaming studios!

On the following pages, our staff editors and regular contributors name the software that most rocked their worlds in 2002. Not all software genres are represented, and none of the picks represent the collective opinion of the Editorial Council of Maxims. But each pick does represent the most indispensable piece of code to at least one of our seasoned power users.

Now let's get soft...

WILL SMITH, TECHNICAL EDITOR

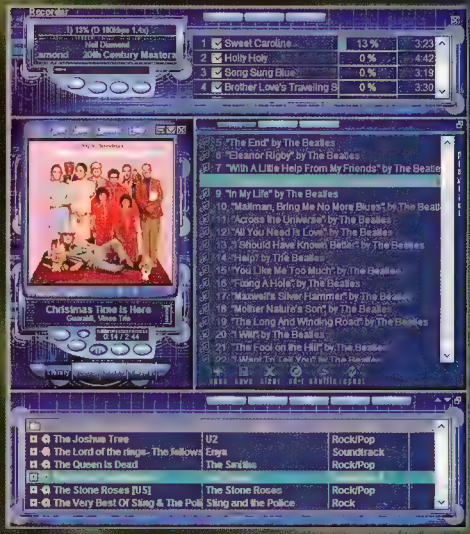
MUSICMATCH JUKEBOX 7.5 PLUS

Unlike simple player apps that do nothing more than step through a playlist, *MusicMatch* lets you grab your music collection by the horns, then sort, categorize, and reorder it to your heart's content. Most true digital music fanatics have a slew of tagging utilities, renamers, audio CD burners, CD rippers, and encoders, but *MusicMatch* eliminates the need for *all* of these apps.

The latest rev of *Jukebox* put a shiny polish on some features that seemed half-done in version 7.0. For example, SuperTagging—*MusicMatch's* advanced ID3 tag editor—kicks ass. It looks at your filenames and your existing artist, title, and album ID3 tags, and compares them with entries in the AMG database (a vast repository containing all the information about almost every album that was ever commercially released). Once that's done, the software presents you with several "near match" listings for your tunes, and lets you choose which are correct on a song-by-song basis. You can then apply changes to both your music database entries and the ID3 tags on your files. Best of all, SuperTagging downloads album art from AMG and displays it in the *MusicMatch* player when you're listening to tunes.

MusicMatch's updated "Send to device" interface is a blessing for transferring tunes from your PC to a portable MP3 player. Just create a playlist—either by hand-picking your tunes or using the nifty playlist generator—then press the Send button. From there, you can drag and drop your playlists over to your MP3 player. I have a 20GB jukebox and *MusicMatch* can handle that too. All I do is plug it in, press the Sync button, and kick back as all my music is loaded onto the jukebox.

I've used *MusicMatch Jukebox* for a long time, and I can't imagine managing my MP3 collection with anything else. *More info at www.musicmatch.com*


Recorder
1 Sweet Caroline 13 % 3:23
2 Holly Holy 0 % 4:42
3 Song Sung Blue 0 % 3:19
4 Brother Love's Traveling S 0 % 3:30
Christmas Time is Here
"The End" by The Beatles
"Eleanor Rigby" by The Beatles
"With A Little Help From My Friends" by The Beatles
"In My Life" by The Beatles
"Maxwell's Silver Hammer" by The Beatles
"Mother Nature's Son" by The Beatles
"The Long And Winding Road" by The Beatles
"All You Need Is Love" by The Beatles
"Help" by The Beatles
"Fixing A Hole" by The Beatles
The Joshua Tree U2 Rock/Pop
The Lord of the Rings- The Fellows Enya Soundtrack
The Queen is Dead The Smiths Rock/Pop
The Stone Roses [US] The Stone Roses Rock/Pop
The Very Best Of Sting & The Pol Sting and the Police Rock

As the ultimate MP3 app, *MusicMatch* even grabs album art from an online database.

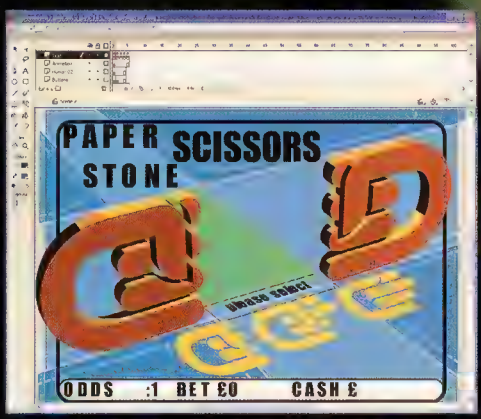
BRIAN LAM, CONTRIBUTING EDITOR

MACROMEDIA FLASH MX

If you fancy yourself the creative type and own a PC, you *have* to get *Flash MX*. As always, it lets you build animations for web sites with the easiest drawing tools in the biz. But did you know that you can code net-enabled multiplayer games and even 3D engines with the new ActionScripting language? Did you know that *Flash*—with its native support for MP3 and video—can build multimedia CDs? And did you know that you can use *Flash* to build "sound-reactive" like the ones in the Dialogue tool used to making pretty sound walls?

There simply isn't another program like it that will let you express your inner artist for such a small price and in so many ways. It manages to be so powerful yet simple. Media rich, yet small. And for all this, I award it a Sexy.

Flash is accessible to the common PC user because it uses vector-based drawing and animation tools. Unlike JPEG and GIF files, vector graphics are described as geometrical shapes. Rather than saving the properties of individual pixels, vector files merely store the shape's size, which allows for more animation with smaller file sizes. You promise, it's easy! For example, when creating a "tween," you simply place a vector graphic in point A, and *Flash* will create the necessary in-between steps to create animation!



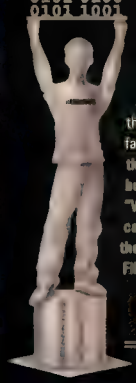
Anyone who's used animation timelines will feel right at home in *Flash MX*.

But the app's true power lies in scripting, which is what really makes *Flash* so exciting. Sites like www.flashkit.com have hundreds of sample movies and source code that can be assimilated into your latest masterpiece. Couple your personal creativity with *Flash's* versatility, simplicity, and support for scripting to build a hit—a hit that nearly 500 million *Flash*-enabled PCs can enjoy. You've got to put this app on your PC! *More info at www.macromedia.com*

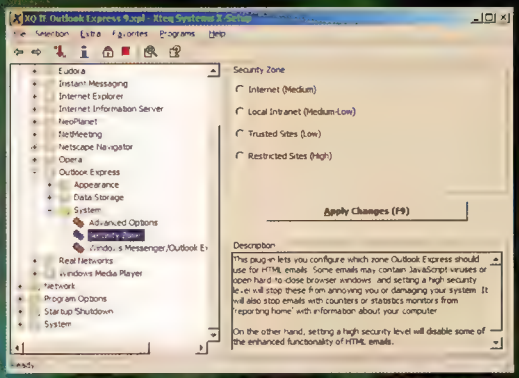
TOM MCNAMARA, CONTRIBUTING EDITOR
XTEQ X-SETUP

X-Setup is the Windows GUI tweaking app you never knew you wanted. Imagine a program that does everything *PowerToys* does—and a whole lot more—at one point. You can tweak virtually any aspect of your desktop, and then move on to system performance, security, and even individual applications.

Ever thought the program icons in your Start Menu take up too much space? Ever wished you could disable the splash screens for *Internet Explorer*, *Outlook Express*, and *Eudora*? Ever want to get rid of the Office Assistant, once and for all? Now you can jump on all these tasks. *X-Setup* also has a built-in Auto Update program that offers plug-ins that expand the total package many times over for Win95, WinXP, and everything in between. There are even tweaks for specific games, apps, and even hardware. And did I mention that it's all completely free?



The Internet is home to many programs and random hacks that let you tweak your basic PC experience, and *X-Setup* rolls them all into one package. And letting access to these powerful features would lead to a hectic, arcane interface requiring a lot of praying and holy sacrifices to get everything working, you should know that *X-Setup* has not one but two ways to access all this stuff. There's a nonintimidating "Wizard" interface that lets you poke around through several categories, but you can also directly access all the tweaks with the Power User UI (grr, baby!), which is functionally the same but in a File Explorer style. On the right-hand side, you get a pane that


XTEQ IT Outlook Express 9.xpl - Xteq Systems X-Setup
File Selection Extra Favorites Programs Help
Eudora
Instant Messaging
Internet Explorer
Internet Information Server
NeoPlanet
NetMeeting
Netscape Navigator
Opera
Outlook Express
Appearance
Data Storage
System
Advanced Options
Security Zone
Windows Messenger/Outlook Ex
Real Networks
Windows Media Player
Network
Program Options
Startup/Shutdown
System
Security Zone
Internet (Medium)
Local Intranet (Medium-Low)
Trusted Sites (Low)
Restricted Sites (High)
Apply Changes (F9)
Description
This plug-in lets you configure which zone Outlook Express should use for HTML emails. Some emails may contain JavaScript viruses or open hard-to-close browser windows, and setting a high security level will stop these from annoying you or damaging your system. It will also stop emails with counters or statistics monitors from 'reporting home' with information about your computer.
On the other hand, setting a high security level will disable some of the enhanced functionality of HTML emails.
Ready

***X-Setup* provides just-for-fun GUI tweaks, but it can also delve deep into arcane security settings.**

and link to detailed explanations for each tweak and which Windows version the tweak is designed for. Red icons and a properly intimidating pop-up warning identify tweaks that can hose your system. Some tweaks require a restart, and we recommend doing only two tweaks at a time until you get familiar with what's going on, and so you can easily isolate any issues that might pop up. *More info at www.xteq.com.*

KATHERINE STEVENSON, MANAGING EDITOR
EARTHVIEWER 3D

We reviewed *EarthViewer 3D* [illegible] about it since. It's that cool. You see me, I'm [illegible] a PC game. Talk about interactivity! Talk about realism! Talk about fun!

Displaying San Francisco's Transamerica building in stunning detail, *EarthViewer 3D* is capable of amazing [illegible].

EarthViewer 3D lets you fly from a photographic representation of the globe, and then hone in on any locale. As you approach your destination, the landscape begins to take shape, buildings come into view, and the honest-to-goodness, real-life details of the geographic region appear before your eyes. Tilt and rotate buttons let you view an area from all sides. A "road" option brings up an overlay of street and freeway names. And should you want to know about dining, recreation, or public services in an area, you can view that information as well. A combination of aerial maps, satellite photography, GPS coordinates, and relational database information makes *EarthViewer 3D* possible. And what's most impressive is that it all comes together so seamlessly.

To handle all this data, your system needs to meet some minimum requirements—namely, 128MB of system RAM, a P-II 300MHz or better CPU, and at least 8MB of RAM on your graphics card (currently the consumer version is available only to people with nVidia graphics cards: Geforce2 or newer). You also need a network connection of at least 128kbps.

The program gives you a head start by providing a ready-made menu of high-res locales and popular points of interest. Or you can simply type in an address for anywhere in the world, and watch with wonder as that site comes into view. Just don't be surprised if you launch the program looking for a single specific site, and find yourself still glued to the screen hours later checking out aerial views of *all* the places you've ever lived, visited, or heard about. It happens to the best of us. *More info at www.earthviewer.com.*

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MECHWARRIOR MERCENARIES

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Microsoft game studios

DEVELOPED BY: CYBERLORE WWW.CYBERLORE.COM

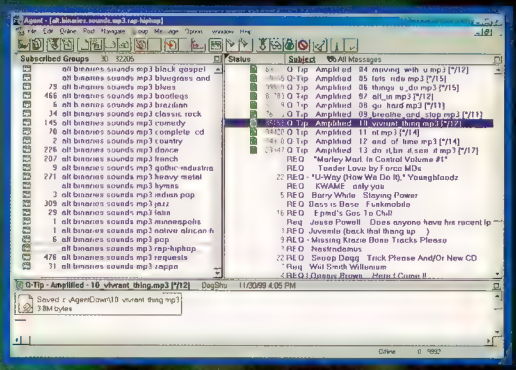
TEEN T Violence Blood CONTENT RATED BY ESRB

THOMAS L. MCDONALD, CONTRIBUTING EDITOR
FORTE AGENT

Agent could well have gone the way of CompuServe. After all, the need for an offline Usenet newsreader vanished along with the dialup connection, and web forums are now the preferred posting places for a new generation of Internet users. But Usenet adapted and *Agent* is as valuable as ever. In the early days, "binary" groups were almost all dedicated to—ahem—"photography" (in the strict Eric Idle sense—nudge, nudge), but today the JPEG binaries have been joined by MP3s.

Peer-to-peer has always been an unsatisfying way of sharing MP3 files, given the variations in user speeds and a general lack of community. Usenet, on the other hand, breaks music and other media files down into very specific genres: alt.binaries.sounds.mp3.indian.bhangra, for example. It's quite simple to pull down the headers for dozens of music groups, mark hundreds of files for bulk download, and just walk away during the mass downloading.

All of which brings us to The King. My early Usenet days were spent in fruitless flame wars, and after about a year of steady use, I largely gave up posting messages. But today, I hit the Elvis groups. The binary trading in bootlegs and studio outtakes is small but passionate—so much so that I've filled about 15 gigs of space with MP3s. *Agent 1.91* makes this even easier with good support for yEnc, and now that the original Forte team is back in business, more refinements are in the works for 2.0.



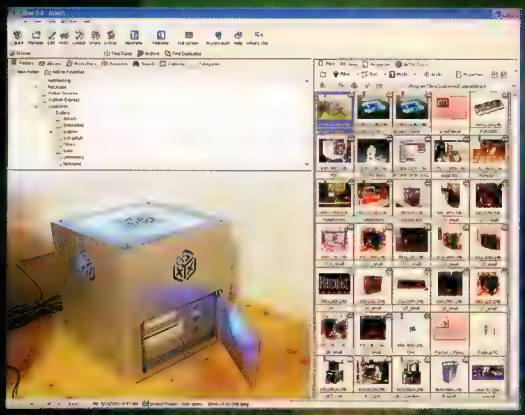
***Agent* is our fave tool for Usenet-based MP3 collecting. In the left-hand pane, notice all the different newsgroups broken down by genre.**

Agent is an utterly transparent program. I simply start it, get headers and messages, and purge once a week. It doesn't crash, flake out, or otherwise piss me off. I'm looking at *you, Word XP* and *Outlook*). It's a revolutionary tool that makes the complex and daunting Usenet manageable even to novice users.

If people realized how easily they could get binaries with *Agent*, they'd never bother with *KaZaA* again. *More info at www.forteinc.com.*

JON PHILLIPS, EDITOR-IN-CHIEF
ACDSEE 5.0

Most people would describe *ACDSee* as the ultimate image-management tool, but for me it serves an agricultural purpose. About once a year, I point the app toward my e-mail attachments folder, and use it to thin the herd. *Zap!* That's the sound of me deleting 47 blurry, utterly unpublishable Rig of the Month photos in one fell swoop. It takes me at least a couple hours to parse through every single JPEG, but once I'm done, my attachments folder is back down to a manageable number of files.



Our editor-in-chief uses *ACDSee* to separate Rig of the Month contenders from the hundreds of pretenders that populate his thumbnail gallery.

ACDSee's ability to quickly generate thumbnail previews is amazing. During my last foray into JPEG husbandry, the 5.0 version thumbnailed my entire attachments folder—2,609 separate images—in just 3:34 (that's minutes:seconds). Lesser applications take much longer, and often crash when asked to process such large jobs.

Once all my thumbnails are created, I set them up in a right-hand pane in *ACDSee's* viewer. Just touch a thumbnail and, boom, a full-size, perfectly pristine preview instantaneously appears to the left. The app's thumbnail caching scheme should be classified as a national security secret, and unlike other image browsers, *ACDSee* lets you fine-tune your thumbnail size (anywhere from 20x20 to 190x130 pixels) and decide among five compression settings for thumbnail storage.

Other indispensable tools help you acquire photos from digital cameras and scanners, convert file formats, create thumbnail "contact sheets," and share your images over the web. Search, sort, and browse functions are comprehensive to a fault, and you can even preview video and audio files. This little write-up delves into only about 5 percent of *ACDSee's* power, so go download the demo version, and then ask yourself how you've been able to live without the software for so long. *More info at www.acdsystems.com.*

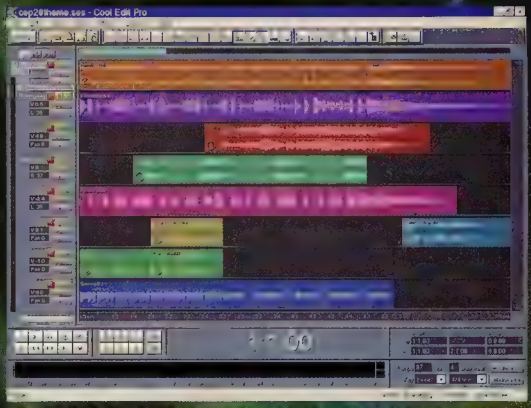
TOM HALFHILL, CONTRIBUTING EDITOR
SYNTRILLIUM COOL EDIT PRO VERSION 2

Cool Edit Pro does for sound editing what word processors do for text editing, only it's way more fun. This dynamite software turns your PC into a professional-quality multitrack recording studio. You can record, edit, and mix as many as 128 tracks. To put that in perspective, consider that the Beatles recorded their landmark *Sgt. Pepper's* album with four-track equipment.

If you're a fussy musician, *Cool Edit* is a dream. With so many tracks, you can nondestructively overdub, do punch-ins, and experiment with different takes until every note is perfect. The software supports popular file formats and many obscure formats. All you need is a microphone. Or do what I've done: Digitize prerecorded audio through your soundcard.

My favorite use for *Cool Edit* is restoring old recordings, because digital filtering is one of this program's greatest strengths. I've rescued the fading sound on 20- to 60-year-old records, reels, and cassettes by cleaning up tape hiss, removing background hum, deleting defects, boosting the volume, and equalizing the tonal balance. *Cool Edit's* noise-reduction and click-and-pop filters are awesome. You can sample a moment of background noise, then automatically remove any noise that matches that profile throughout the whole recording—without audibly altering the speech or music.

The application is intimidating at first, but the user interface is surprisingly good. It was obviously designed by someone who's comfortable with both computers and professional recording equipment. And the help files should be an industry standard. They go beyond explaining the software to become a virtual tutorial on sound recording and audio theory.



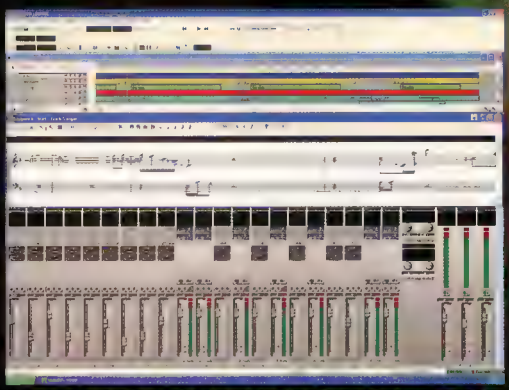
***Cool Edit Pro* can revive music from tired media, help you record new music, or let you hack away at your recordings, as shown in the screen above.**

Want a taste? Syntrillium offers [illegible] between $69 and $99. I've been using *Cool Edit* since [illegible], and it's one of the best programs I've ever seen. Find out at *www.syntrillium.com*.

LOGAN DECKER, FEATURES EDITOR
CAKEWALK SONAR XL 2.1

Admittedly, a "sequencer" doesn't sound like a very sexy thing, [illegible] when I was still drooling over my pacifier, it wasn't. Hardware sequencers simply [illegible] notes. Whoop-de-do.

Cakewalk's *SONAR XL* will not play notes for you, but those notes will come from custom [illegible] sounds voiced by its Dimension Xi synth. And once the software has those notes, it lets you [illegible] through a chain of effects, adding [illegible] to represent the [illegible] and shimmering it up with a touch of [illegible]. The software [illegible] rhythm [illegible] *SONAR XL* to pull drum samples [illegible] and help you fix it all together [illegible].



Hardware metaphors—like the mixing board shown above—and the ability to "paint" rhythm in the Staff view, help keep *Sonar* as easy to use as possible.

[illegible] and Roll Hall of Fame [illegible] 24-bit/96KHz recording studio in a box. It includes [illegible] you need to make music, except for talent and an [illegible]. The app uses WDM kernel-streaming to reduce [illegible] more efficient method of passing along audio data [illegible] delay between hitting a note and hearing the results.

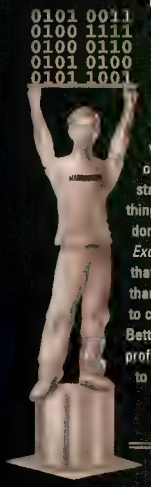
Much ado has been made about people buying the industry-leading sequencer *Logic Audio* and porting it Mac-only. So what? *SONAR XL* brings a full [illegible] into your clubhouse, and all it asks for is a decent [illegible] and a good ear. *More info at www.cakewalk.com.*

GREG "THE VEDE" VEDERMAN, DISC PRODUCER
ENTECH POWERSTRIP

By day, I'm the CD-ROM producer for *Maximum PC*. By night, I'm the fiend known to countless legions of *PC Gamer* readers as "TheVede." And as the tech editor for *PC Gamer*, I don't know where I'd be without the latest version of *PowerStrip*.

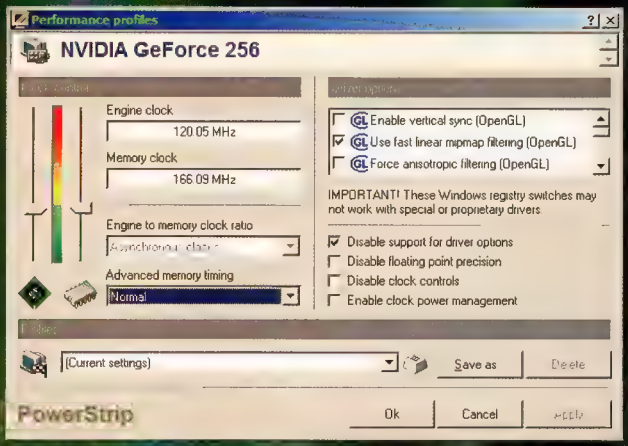
Let's face it, I'd probably be in jail.

If you're a videocard tweaker, a hackz000r, or even just a common dweeb, downloading and using a copy of this small videocard utility will dramatically improve your life. It works with all of the most popular videocards, and is constantly being updated to support the latest tech.

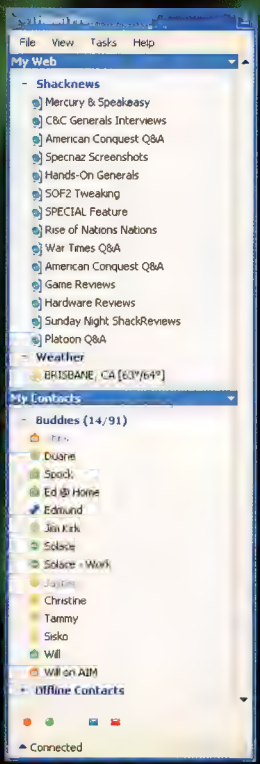


Yeah, yeah, but what does it do, TheVede? What does it do? Well, I use it to overclock videocards, but it's capable of oh-so-much more than that. For starters, you know how Windows XP does that nasty thing where the refresh rates you set for your desktop don't carry over into your games? You know: 85Hz in *Excel*, but just 60Hz in *Quake III*? Well, *PowerStrip* solves that problem, friends. It also provides access to more than 500 display controls, ranging from screen geometry to color correction, and everything else in between. Better still, *PowerStrip* comes with a handy application profiler that lets you make all types of unique adjustments to each and every game you play. It even detects when you shut down one game and start another, and makes the appropriate adjustments without requiring you to touch a thing!

I ask you, what could possibly be better than *PowerStrip*? It's TheVede's Softy! And everyone wants to get their hands on TheVede's Softy! *More info (about the software) at www.entechtaiwan.com/ps.htm*



Just slide the clock controls, and *PowerStrip* will overclock your videocard accordingly.



GORDON MAH UNG, SENIOR EDITOR
CERULEAN STUDIOS TRILLIAN PRO

I was mad as hell and couldn't take it anymore. I needed to run *Yahoo Messenger*, *AOL Instant Messenger*, *MSN Messenger*, *ICQ*, and my IRC client all on a single PC. The different messaging technologies were at war with each other, and I was sending out text dispatches from the middle of ground zero.

Of course, that was before I found *Trillian*, the niftiest messaging client this side of Planetia Utopia. Launched as an underground movement to unify the hordes, *Trillian* lets you replace your motley collection of apps with a single client. *Trillian* supports skinning, secure messaging, proxies, and transparency effects under WinXP/2000. The Pro version, which costs just $25, adds a plug-in system that lets you download weather reports and grab headlines from your favorite news sites. There's even a plug-in that will read your messages back to you. The Pro version also gives you the latest bug fixes as soon as they're released, and supports the whole tiny cause of unified messaging, which is something those damned big networks just don't understand.

Trillian doesn't support every single feature offered by all the individual messaging clients, but I have yet to discover any truly useful features that've been ignored. Also, Cerulean Studios issues more point-releases than the average software developer—but this is to be expected considering how many messaging technologies *Trillian* supports, and the fact that the original developers of those technologies aren't exactly motivated to provide help.

If you use more than one resource-sucking messaging app, do yourself a favor and download *Trillian Pro*. It's indispensable. More info at *www.ceruleanstudios.com*. ■

Anyone who's ever used a messaging client should feel at home in *Trillian*.

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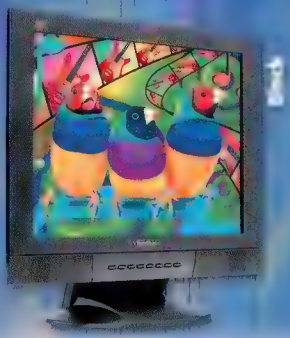

VG700b 17" LCD. Today's systems are all about basic black, and ViewSonic® has just the displays to match. Priced right, the big 17" flat panel offers a high 450:1 contrast ratio with 260 nits of brightness plus a fast video response time for smear-free clarity for video and streaming media. Two 3-watt bezel-integrated speakers are great for gaming and multimedia applications. Or see other 17" LCDs; one is sure to be a perfect match:

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Athlon XP 1[illegible] $[illegible]
Athlon XP 1[illegible] $[illegible]

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Duron 1.2 GHz $[illegible]
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2.53 GHz 533FSB 512K $[illegible]
2.4B GHz 533FSB 512K $[illegible]
2.26 GHz 533FSB 512K $[illegible]
2.[illegible] GHz 400FSB 512K $[illegible]
1.[illegible] GHz 400FSB 256K $[illegible]

PENTIUM III FCPGA/2
P[illegible] GHz 256K $[illegible]
P[illegible] GHz 256K $[illegible]
P[illegible] GHz 256K $[illegible]

CELERON FCPGA2/478
Celeron 2.0GHz s478 $89
Celeron [illegible] s[illegible]
Celeron [illegible] $[illegible]
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COOLING ACCESSORIES

COOLERMASTER
Socket A & 370
AMD Athlon Aluminum $[illegible]
Jumbo Aluminum Fan $[illegible]
HCC-[illegible] $[illegible]
HCC-[illegible] $[illegible]
HSC Universal Copper Pipe $[illegible]
In-[illegible] Case $[illegible]

THERMALTAKE
Volcano AMD Axial $[illegible]
Volcano Copper K $[illegible]
Volcano Extra $[illegible]
Dragon Fighter Multi-Socket $[illegible]
Active Memory Cooler K $[illegible]

USB

64MB USB Thumb Drive $[illegible]
128MB USB Thumb Drive $[illegible]
USB 2.0 PCI Card $[illegible]
USB 2.0 [illegible] $[illegible]
USB 2.0 EXT Cable [illegible] $[illegible]
USB 2.0 A/M-B/M [illegible] $[illegible]

STORAGE

MAXTOR
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120GB 100/5400/2MB $167

WESTERN DIGITAL
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60GB 100/5400/2MB $88
60GB 100/7200/2MB $98
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120GB [illegible] $179
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IBM
40GB 100/7200/2MB $92
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IOMEGA
250MB Internal $89
250MB EXT USB $134
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CONTROLLERS

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PROMISE
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DRIVE COOLING

PCI 5 of System $7
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CASES

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VIDEO CARDS

POWERCOLOR-NVIDIA
[illegible] $11
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Powercolor - ATI Powered
RADEON
[illegible] $[illegible]
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9000 Pro 128mb DDR $135
9700 Pro 128mb DDR $379
MSI
[illegible] $56
GeForce 4 Ti 4200 $144
ATI - Built by ATI
AIW 8500DV 64MB $191
MATROX
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[illegible] CALL
Powercolor - SiS Powered
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CD ROMS

54X Mitsumi $23
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DVD ROMS

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CD-RW

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DVD R/RW

PIONEER
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CAMERAS

LOGITECH
Pocket Digital Camera $102
Quickcam Zoom $70
Quickcam Pro 4000 $67

MEMORY

DDR
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512MB PC2700 $150

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128MB PC100 $23
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64MB PC133 $15
128MB PC133 $23
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256MB REG ECC $52
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RAMBUS
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256MB PC800 NON-ECC $86
128MB PC800 ECC $50
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LEET ME WARRANTY

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LOGITECH
Cordless Optical Trackman
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MOTHERBOARDS

PENTIUM4 / CELERON
GIGABYTE
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ASUS
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P4B533E 845E $[illegible]
MICROSTAR
MSI 815EMAX2 BLR $101
MSI 845E MAX2-LR $130

ATHLON / DURON
GIGABYTE
GA-VAX KT333 $[illegible]
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MICROSTAR
MSI KT4 ULTRA $[illegible]
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MSI KT4 ULTRA-R $[illegible]
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SOUND CARDS

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Audio Vortex [illegible] $60
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NETWORKING

SWITCHES HUBS
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NETWORK ADAPTERS
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WIRELESS NETWORKING

LINKSYS
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Cable/DS [illegible] $[illegible]

MONITORS

17
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LCD Displays
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Ask the Doctor

Symptom → Diagnosis → Cure

Have a burning PC problem? How about a burning PC sensation? We're more than happy to help you with your PC problems, but you might want to get that sensation thing checked out by a qualified sensation checker-outer. If you have PC questions, send them to **doctor@maximumpc.com**. Just remember: We can't answer every e-mail. Oh, *no*—not by a long shot.

What's a White Box?

I need to get some upgrades for my computer. I've found great deals, but I've come across a few that are sealed in OEM boxes. I was wondering, what does OEM mean and is it worth buying these products, or should I stay away from them? Thanks.

—AMMA

OEM stands for "original equipment manufacturer," although that doesn't shed much light on what it means.

There's nothing inherently wrong with purchasing OEM, or white box, PC gear. OEM hardware is intended for system builders and doesn't include any of the "flare" that a package destined for retail shelves would have. OEM hardware usually doesn't include any sort of manufacturer warranty, something you should definitely consider before plunking down a lot of cash on computer hardware.

When buying from a vendor that sells OEM hardware, beware. While it's easy to find cheap hardware on Pricewatch.com, not all the vendors there are reputable. Make sure you check with Resellerratings.com to find out if other people have had problems with your prospective vendor.

Three-Monitor Mojo?

I was wondering if there's any way to set up a triple-monitor system that will work for gaming. I refuse to buy the Matrox card, and I already have a GeForce4 Ti 4400. I know I can use dual monitors with my existing card, but what about adding another GeForce PCI card for a third display? I have a Pentium 4 1.9GHz system with Windows XP Home SP1. I'd appreciate any help that would save me from wasting money on another videocard that won't work.

—RUSS MILLER

Bad news, Russ: At the moment, the only board that supports triple-monitor gaming is the Matrox Parhelia. And it took some special driver mojo to get games playing across all three screens. On its own, Windows is incapable of displaying 3D on secondary monitors.

Some nVidia boards will let you stretch a 3D game across two monitors if you use the stretch mode instead of setting independent resolutions and refresh rates for your two monitors. In order for this to work, your game must recognize the odd refresh rate that it will have to run.

Athlon Compatibility Query

I was reading your November issue article about the new XP processors and the 333MHz bus. The article said that a KT400 chipset was recommended for the 2700+ and 2800+ CPUs. I have an XP 2100+ on an MSI KT3 Ultra2-R with 1GB of Corsair PC2700 memory. Is it possible to switch to an XP Thoroughbred B processor without having to change my motherboard? I would've thought that a KT333 chipset would work.

—JOE SAMEH

Support for CPUs with a 333MHz bus is generally limited to KT400 and nForce2 motherboards, but certain KT333 motherboards will work. On AMD's short list of KT333 motherboards that support the 333MHz bus are Asus' A7V333 Rev 2, Gigabyte's GA-7VRXP Rev 3, and MSI's KT3 Ultra 2 Rev 1.0A1. Don't immediately jump for joy, though. Note that the Doctor said Rev 1.0A1.

Motherboard makers don't make all motherboards the same. They revise the boards with updates or fixes to problems. Unless you have a Rev 1.0A1 MSI KT3 Ultra2, you may not be able to run the 2700+ CPU. For more accurate information, contact your motherboard maker or visit AMD's web site to see the approved list and additional details. It's possible that the fastest CPU you'll be able to run is the AMD 2600+.

Does AGP 8x Matter?

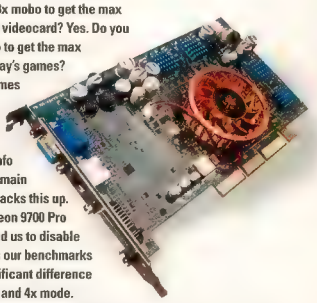
I'm wondering if the Radeon 9700 works on AGP 4x. I heard it supports AGP 8x, but I'm thinking of buying a Shuttle SB51G, which supports only AGP 4x. If I buy a Radeon 9700, would I get the maximum performance out of it? Or do I need an AGP 8x motherboard to get max performance?

—K.M.

Do you need an AGP 8x mobo to get the max performance from the videocard? Yes. Do you need an AGP 8x mobo to get the max performance from today's games? Not really. Current games aren't able to saturate the AGP 4x bus, which can pump about 1.06GB/sec of info from the videocard to main memory. Our testing backs this up.

We tested the Radeon 9700 Pro in a board that allowed us to disable AGP 8x. And, as far as our benchmarks go, there was no significant difference between the 8x mode and 4x mode.

We do expect to see games next year, such as *DOOM III*, that will stress the 4x AGP bus.



The Radeon 9700 Pro supports AGP 8x, but it's not necessary for today's games.

I'll Take an Inspiron sans USB 2.0

I have a Dell Inspiron 8200, and I bought a Lite-On LXR-24101A USB 2.0 CD-RW drive to go with it. My problem is that it takes me on average 12 minutes to burn a single 670MB data CD. I thought it was the media, but I tried switching from Sony media to Maxell, which is certified at 24x, and the problem persisted. I tried using *Nero Drive Speed*, and during the test, my drive clocked in at only 6x. But when I used *Nero CD-Speed*, it indicated that the drive was capable of doing 24x as advertised. I'm using *Nero 5.5.9.14* for burning, and I'm a bit confused, to say the least. The drive was advertised as a 24x USB 2.0 drive, and as far as I know (according to the Dell representative's assurances) the Inspiron 8200 supports USB 2.0. So what gives? I would appreciate any help that you can offer.

—ETAN SUGARMAN

It sounds like your drive is limited by the USB bus—the USB 1.1 bus, that is. The maximum capacity that USB 1.1 can reasonably accommodate is 6x recording, about 900Kb/sec. If your laptop indeed has USB 2.0 support, the drivers aren't enabled. However, we haven't seen an Inspiron 8200 yet with integrated USB 2.0, nor is there any such model evident on Dell's web site, so it seems you were misled.

If you want to burn at full speed, you're going to need a USB 2.0 card for your PC. We recommend Adaptec's USB2connect for Notebooks ($70, www.adaptec.com). Not only are Adaptec's drivers reliable, but you can also download Adaptec's own very cool *USBcontrol* utility, which allows you to monitor throughput on each device and do some basic troubleshooting on your connections. The two ports on the USB2connect for notebooks are also backward-compatible with USB 1.1 devices, but of course these devices will still run at USB 1.1 speeds.

I Bent My Athlon

I was running a Gigabyte GA-7VTXE mobo with an AMD XP 1800+ CPU. I upgraded and installed a 2200+ XP in its place. I did everything correct, and within 15 seconds the CPU was fried. Do you have an explanation or a guess? It also took the motherboard with it.

I got a new GA-8IEXP and a new 2.53GHz Pentium 4 so I wouldn't have to replace so much, but I'm still bothered by what happened with the 2200. I will build another computer if AMD warranties the 2200+.

—THE DUDE

A catastrophic thermal failure of an Athlon generally indicates only one problem: user error. Assuming you were previously using a hotter Palomino-core Athlon 1800+ and not the new cooler Thoroughbred-core Athlon 1800+, your heatsink was probably more than powerful enough to cool the 2200+. Since the CPU had core breech in just 15 seconds, the Doc's guess is that the heatsink was improperly mounted to the motherboard.

Your failure highlights one of the key differences between the Pentium 4 and Athlon XP: thermal management. The Pentium 4 uses a heat spreader to help dissipate heat and will automatically clock down in speed should it sense that it's overheating.

Unless the motherboard supports automatic shut-down in the event of overheating, an Athlon will heat to near-melting.

How Much Faster is a 166MHz FSB?

I was wondering how much of a performance boost the AMD XP CPUs get from running on a 166MHz FSB (333MHz) in conjunction with 333MHz DDR RAM? I've seen some web sites that claim there's no significant performance gain. Is this because of the 64-bit CPU-to-memory data path that the Athlon XP uses?

—MICHAEL THOMAS

The Doctor isn't sure what the web sites are saying, but the Athlon XP does experience a fair boost when its frontside bus is increased to 166MHz/333MHz DDR. While clock speeds continue to climb at a crazy pace, memory bandwidth has not. The Athlon is handcuffed a bit by its narrower bus (the P4 has a 256-bit CPU-to-memory data path) but still benefits from the added bandwidth.

Stationary in Outlook Express Expressly Suck Ass

I've been having trouble with stationary in *Outlook Express*. I can create it, but many of our clients complain that it shows up as an attachment to download, or is tiled across the page of the text message and won't display in their e-mail programs. My boss is all over me about fixing the problem. Even when I e-mail myself at my AOL address, it shows up as an available download. Many times, e-mail from other people containing stationary does the same thing. My *Outlook Express* gets it just fine. What am I doing wrong?

—CHRIS MARTIN

Chris, Chris, Chris. Why on earth would you perpetuate the horror that is *Outlook* and *Outlook Express* stationary? Let's list the reasons that e-mail stationary is lame:

➤ It only works in Microsoft e-mail clients and some e-mail clients that read HTML.

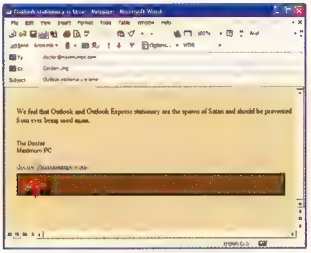
➤ Most e-mails are short, concise communications, and the stationary is quadruple the size of the e-mail itself.

➤ Despite the best efforts of designers around the world, no one has made a tasteful stationary file.

➤ Did we mention that e-mail stationary is lame?

Think about it: Many of your clients can't read the stationary, presumably because they're not using a Microsoft e-mail program. That means you're spending money on bandwidth just so the people you e-mail within your company can know where you work. Do you think they missed the sign when they walked in the door this morning?

If you want to communicate that you work for Company X in every e-mail you send, use a nice small text signature in a svelte plain-text e-mail message.



Sure other *Outlook* and *Outlook Express* users can see your stationary, but why do you really want that?

Pressing F6 at Just the Right Moment

I just finished cloning the Dream Machine. I'm running most of the same hardware, including the RAID controller. My problem arises when I try to install Windows. I'm using a brand-new full version of Windows XP Pro right out of the shrink-wrap. The CD-ROM spins and the hard drive light runs for a while, then eventually I get to a Windows welcome screen, which gives me three options: Press Enter to continue, F3 to exit, or R to repair Windows. I don't get any message about pressing F6 to set up mass storage controllers, nor does hitting the F6 key at this screen do anything.

If I press Enter, it goes to another screen and tells me that no IDE hard drives are present, and I have to press F3 to exit. I've tried everything I know to do, but can't get my system running off the RAID controller to save my life!

—KENNETH CARPENTER

The Doctor gets this question a lot, so don't feel bad. You see, you just missed the "Press F6 to install a third-party SCSI or RAID driver…" prompt. It's easy to do, as the message scrolls by really fast several seconds after the XP install screen turns blue. Pay very close attention to the white bar at the bottom of the screen—that's where the message will appear. You can safely press the F6 key any time during the install process, so if you want to start rapidly pressing the F6 key as soon as the screen changes, feel free.

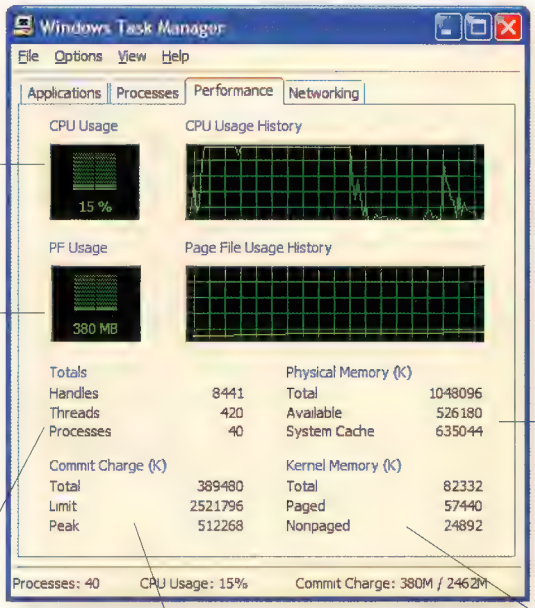
What's All This Stuff in Task Manager, Anyway?

I've been very curious about how to correctly read the information on the Performance tab in Windows Task Manager under.

I've never been able to utilize all the Physical Memory on any of my machines, no matter how many programs I open. Also, I have no clue what PF usage is or why it never changes whether I run a program or not. Am I reading it wrong? Is there something I can set to maximize my RAM usage? Are any of my questions even valid?

—BIG DADDY BEY

Task Manager is a handy little app. It performs two main functions: system modification (with the Application and Processes tabs), and system performance monitoring (with the Performance and Networking tabs). Here's the app up close:



Within the Performance tab, you've got graphs illustrating CPU usage and PF (page file) usage. CPU Usage shows what percentage of your CPU is being used at the moment, while CPU Usage History shows what percentage of your CPU has been used over the last few minutes.

The PF Usage and Page File Usage History charts are similar to the CPU charts, but they show the use of your computer's page file—a file on the hard drive that's used when your system runs low on RAM. A lot of activity on the page file charts indicates a need for more memory in your system, while a lot of activity on the CPU chart means you could use a CPU upgrade.

The Physical Memory section details the status of the RAM in your system. The Total value indicates how much RAM is installed in your system, in kilobytes. Available indicates the amount of unused memory available to programs, and System Cache shows how much physical memory is currently being used by your PC.

Below the graphs is the Totals section—another source of useful info. The Processes value is the number of programs running on your PC at that moment. Open a new app, and that number will go up. Close it, and the number will drop. Each process can have one or more Threads that run information through the processor. (If an app has more than one thread, it can run on more than one processor in a multiprocessor system.) Finally, Handles are all those things that an application might need access to—files such as documents or DLLs, Registry keys, or any other resource.

The Commit Charge section details the amount of page file space, in kilobytes, currently being used by the operating system and applications in your PC. The Total value should be the same as the number in the PF Usage chart. (Remember that 1024KB equals 1MB). The Limit is the current page file size plus the amount of physical memory in your system. The Peak indicates the most physical RAM and page file space that's been used in your system since your last reboot. Ideally, this number will be a little less than the amount of RAM in your system. If either the Peak or the Total is regularly larger than the Total of Physical Memory, you're likely to see a significant performance boost by adding more RAM to your system.

Finally, the Kernel Memory section shows how much memory is used by the most basic functions of your operating system. The Total shows how much memory is used by the kernel and drivers. The kernel feeds application threads to the CPU to keep it as busy as possible, and handles errors within the apps. The total is divided into two different types of memory, Paged and Nonpaged. Paged memory is non-critical information, that can be copied to the slower page file, while nonpaged memory must remain in the faster physical RAM. ■

How To...

A step-by-step guide to tweaking your PC Experience

CONVERT YOUR VHS Tapes to DVD

Kiss your VCR goodbye once and for all!

BY BRIAN LAM

MAXIMUM PC
TIME TO COMPLETION
03:00
HOURS MINUTES

You probably have a box of old VHS tapes: summer vacations, birthday parties, maybe even a boxing match or two. The problem is you no longer have a VCR hooked up to your TV, so how are you supposed to relive all the memories stored on those antiquated analog archives? If you've got a PC with a DVD burner, you can make shiny DVD copies of all your VHS tapes.

An analog capture device, such as the ATI All-In-Wonder videocard, can be used to transfer the VHS video to your PC. DVD creation software can write your discs to a format that's compatible with most set-top players. Of course, you'll need a reasonably peppy PC: At least 5GB of free space on a quick hard drive is a must, and a 2GHz or faster CPU will only aid the encoding process. Check the ingredients on the right to make sure you've got everything you need. Also, be aware that even with the best burners and media, the DVD-R disc you burn may not run on *all* set-top boxes.

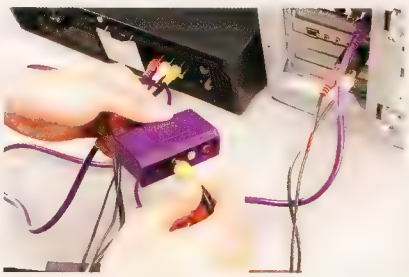
Ingredients List

- DVD burner (either +RW or –RW will do)
- Appropriate DVD media
- Creation software: Sonic MyDVD
- Analog capture card: ATI All-In-Wonder 9700 Pro, or any analog capture card
- VCR
- Your old VHS tapes
- RCA video and audio cables
- RCA-to-1/8" mini-jack adapter
- Hard disk space—at least 5GB

1 Jacking In

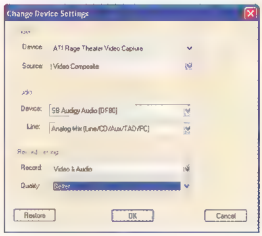
Before you begin encoding and burning, you'll have to make sure all your hardware is set up. Connect your VCR video output to your capture device using the coax RCA cables. If your card only captures video but not audio, send the audio output from your VCR to your soundcard's "Line-In" jack using the mini-jack adapter. Otherwise connect the audio outputs from the VCR to the audio input on your capture card.

Once your cables are situated, you'll need to configure *MyDVD* to use your largest and fastest hard drive to store video. (To ensure the best performance during capture, you should make sure your drive is fully defragged.) Open *MyDVD* and select "Create or Modify a DVD Project." Go to the Preferences dialog (via the File menu) and change the drive settings on the "Hard Drive" tab. Now exit *MyDVD* for the settings to take effect.



2 Quality Control

Reload *MyDVD*, and again hit "Create or Modify a DVD Project." Make sure your VCR is on, then hit the "Capture" button followed by the "Record Settings" button. This will bring up a "Change Device Settings" box. Here, you want to make sure the right Audio and Video sources are selected (see screenshot). Next, in the Record Settings field, you'll specify what video quality to encode at (*MyDVD* uses the MPEG-2 format). Your first instinct will be to select "Best," but that's overkill for VHS-quality source material, and translates into a mere hour of footage per DVD-R disc. We recommend you choose the "Better" video quality setting to fit about two hours of video on your DVD-R. And forget about the "Good" setting: The compression noise looks terrible.



Once you've closed out of "Change Device Settings," you're ready to begin testing and capturing. For your audio volume, you'll need to adjust the volume control of your source channel (usually Line-In) in your Windows volume control panel. You can experiment with different volume levels, but we suggest you start at 80 percent.

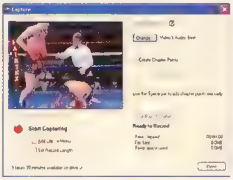
3 Catching Video

To start recording:

➤ From the main screen, enter Capture mode.

➤ Using the capture preview window, cue your tape (the control below the preview window follows standard VCR-style commands).

➤ Hit "Start recording," then hit "Play" on your VCR. At this point, video and audio should come through on the preview window and your PC's speakers.

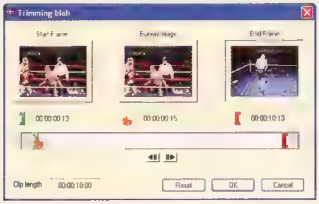


Before attempting to capture your entire tape, record a small test clip to make sure your settings are OK. Hit "Stop Recording" after a few seconds, name your clip, and exit the capture dialog. Enter *MyDVD's* Preview mode by pressing the arrow and clicking on your movie's icon to watch the short clip you just made. Do your sound and video seem OK? If not, repeat Step 2 and fine-tune your settings. When your recording settings are dialed in, rewind your tape and capture your entire video clip. (This is where lots of space on a fast hard drive is key!)

4 Polishing Your Videos and Menus

Take a little off the sides

Before you can consider your clips ready for the big screen, you've got to trim the blank frames from the beginning or end of each clip.



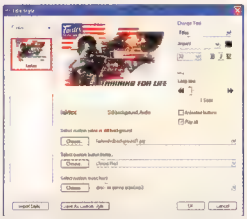
➤ Click once on the new movie icon from the project screen to select it.

➤ From the menu, go to Tools > Trim Movie.

➤ Slide the first and last markers to cut off any blank frames or embarrassing moments (see pic).

A la carte menus

To change the flavor of your DVD's title screen, hit the "Edit Style" button. You can choose from a bunch of pokey premade templates, or you can build your own. Import your own pictures or even video for your background image, and MP3s or WAVs for the title screen's background music. While you're at it, switch the font type and color for final touches.



5 Burn!

You're ready to burn your DVD. Insert a piece of DVD media and hit the "Burn" button. When it's done, the resulting disc should play in any PC with a DVD-ROM drive, as well as in most recently manufactured DVD set-top players. Congrats, you're now a digital content producer!

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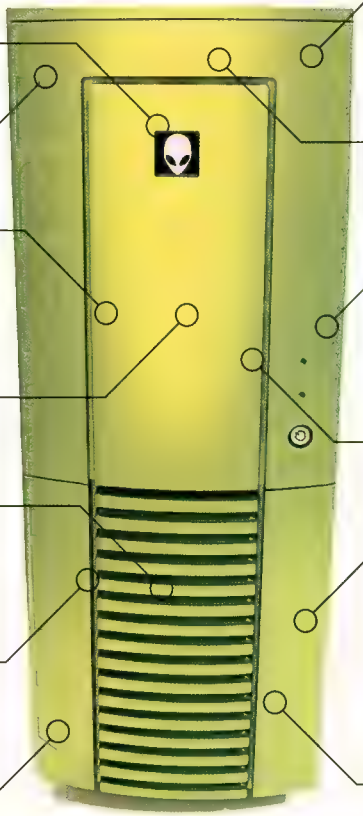

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120GB 7200RPM Ultra ATA100 Hard Drive 8MB Cache
ATI® RADEON™ 9700 PRO 128MB DDR
AlienAdrenaline™ Video Performance Optimizer
Exclusive Koolmaxx™ Video Cooling System
Sound Blaster® Audigy 2™ 6.1 Sound Card
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Black 48X/24X/48X CD-RW Drive
Black Dragon Full-Tower ATX Case 420-Watt PS
Black Microsoft® Internet Keyboard
Black Microsoft® Intellimouse Explorer 3.0
U.S. Robotics V.92 56K Modem
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PLAYS BEST ON ALIENWARE

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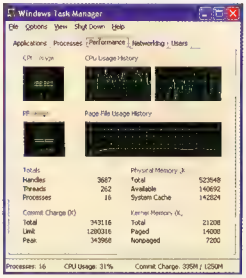
In the Lab

A behind-the-scenes look at Maximum PC testing

Hyper-Threading: Two CPUs for One

3GHz P4s give you a processing boost for free



Notice the dual CPU Usage History charts. If you have WinXP Home or Pro, you'll see double with Hyper-Threading turned on in your single-CPU machine.

Hyper-Threading wasn't supposed to arrive in consumer-level processors until the end of the year, but Intel has pushed ahead its "two-CPUs-in-one" technology, and *Maximum PC* is now ready to provide a more conclusive opinion regarding its performance benefits. But before we discuss benchmarks, let's look at how a Hyper-Threaded processor differs from a normal CPU.

Despite having multiple execution units, a run-of-the-mill processor still executes instructions sequentially—that is, one at a time. As a result, Intel says, a typical CPU uses only about 35 percent of its resources at any given time. Dual-proc systems, of course, can execute two instruction threads simultaneously. The downside is that an extra processor costs extra money.

If your P4 logo bears the HT markings, you're Hyper-Threaded.

Enter Hyper-Threading. Requiring just 5 percent of a CPU's die real-estate, Hyper-Threading makes a single processor appear as two independent processors to a compatible OS. The two virtual CPUs can handle separate instruction threads simultaneously, and your performance jumps accordingly—or so the theory goes. To run Hyper-Threading, you need support in your CPU, core-logic chipset, BIOS, and OS.

For its desktop platform, Intel is introducing Hyper-Threading in 3GHz and faster Pentium 4s (it's present but fused off in slower P4s). Intel says the technology can provide up to 30 percent more performance, depending on the tasks and applications. When we previewed Hyper-Threading last year, we used a pair of Intel Xeon CPUs running at 2.2GHz. Intel says it has since polished the technology, and we have to concur that it now makes more of a positive difference—on our dual Xeon rig, enabling Hyper-Threading actually caused *SYSmark2002* scores to drop!

For our 3GHz P4 Hyper-Threading tests, we built up a machine using a single processor, an Intel D850EMV2 motherboard, 512MB of PC1055 RDRAM, a Radeon 9700 Pro, and Windows XP Pro with SP1. In *SYSmark2002*, we didn't see a performance drop with HT enabled, but we didn't see an improvement, either. This is odd because the benchmark touts multitasking in its testing regimen, and Hyper-Threading should aid multitasking. Likewise, HT offered no performance boost in *3DMark2001 SE*, though this is to be expected, as *3DMark* is mostly a videocard benchmark.

Our *SiSoft Sandra* benchmarks made Hyper-Threading shine, but both of these are synthetic benchmarks, so they don't make for a very convincing argument. However, in the Newtek *LightWave 7.5* 3D rendering test, HT gave us a 15 percent performance bump—that's the equivalent of a 420MHz shot in the arm.

To test HT's effectiveness in multitasking, we rigged our own real-world test, timing how long it took Adobe *Photoshop 7.0* to complete a series of filters and functions while *MusicMatch* 7.2 was encoding a high-quality MP3 in the background. With HT enabled, *Photoshop* took 27 percent less time to complete its tasks, while *MusicMatch's* score improved by 8 percent. These are great numbers, but just be aware that certain applications—even multi-threaded apps—may actually give you worse performance. Many apps also claim to be multi-CPU-aware, but don't take advantage of two cores.

Software compatibility could also become a thorny issue. Some apps that never ran well (or at all) on dual-CPU systems will have fits with Hyper-Threading. It's also likely that Hyper-Threading will break bad device drivers.

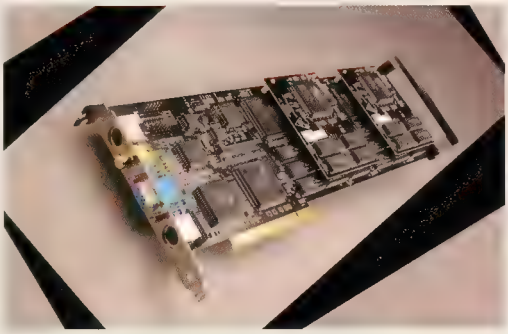
Does all this scare us? No. Patches will erase compatibility and performance issues, and you can always turn off HT in your BIOS if it bites you on the ass. There's really no reason not to want the technology—it truly does offer "free" performance.

DARE TO COMPARE: HYPER-THREADING OFF AND ON

Benchmark	Hyper-Threading OFF	Hyper-Threading ON	Difference
SiSoft Sandra 2002 MIPS	6,086	7,206	+18%
SiSoft Sandra 2002 MFLOPS	3,805	5,994	+57.5%
SiSoft Sandra 2003 MIPS	7,691	9,499	+24%
SiSoft Sandra 2003 MFLOPS	4,044	5,590	+38%
SYSmark2002	282	282	0%
3DMark2001 SE	15,407	15,362	0%
UT 2003 botmatch	72.5 fps	72.8 fps	0%
LightWave 7.5 "Raytrace"	106.1 sec	92.6 sec	+15%
Adobe Photoshop7.0 MPC action script*	75 sec	55 sec	+27%
MusicMatch 7.2 MP3 Encoding*	179 sec	165 sec	-8%

**Photoshop 7.0* and *MusicMatch 7.2* were run concurrently. Percentage differences have been rounded out.

Name That Hardware!



We found this old board when we were cleaning out the Lab. We know what it is, but do you? The first person to correctly identify the object in an e-mail to will@maximumpc.com (subject header: "hardware contest") wins some *Maximum PC* schwag and a copy of the *Maximum PC Ultimate How-To Guide*.

Western Digital Quick Tester

Suspect your hard drive is dead? The hand-held WD Quick Tester can tell you for sure if your drive is the source of your PC's stuttering. Just plug your suspect drive into the tester via an IDE cable, power it up using any PC power supply, and run the quick test. You'll know in five minutes if your drive is reporting any SMART diagnostic errors. If you're still not convinced that everything is hunky-dory, you can fire up the full media scan to test the entire platter for physical defects.

Using the Quick Tester, we discovered that a supposedly dead IBM 75GXP was really only suffering from a bad reputation—and a bad IDE cable. That's right: After you've verified that a particular drive has a clean bill of health, you can use the tester to determine the vigor of all your cables. To keep track of multiple test runs, the Quick Tester can spit out the last 100 test results to your PC via serial cable.

Software-based diagnostics will provide answers to most users' hard drive problems, but for pros who need to test a lot of drives, the Quick Tester can save you a ton of time. The device costs $250; more info at **http://support.wdc.com/order/drivestester.asp#.**

Best of the Best

As of January, 2003

Here are our current top picks for each hardware category. Red text indicates first month on chart. Check back next month for updates.

High-end videocard:
ATI Radeon 9700 Pro
Budget videocard:
Gainward GeForce4 PowerPack!Ultra/650XP Golden Sample (GeForce4 Ti4200)
Do-everything videocard:
All-In-Wonder Radeon 8500DV
Soundcard:
Sound Blaster Audigy 2 Platinum
Hard drive:
Western Digital WD1200JB
CD-RW drive:
Plextor PX 4824TA/BPS
DVD burner:
DRU-500A
LCD monitor:
Sharp LL-1820
CRT monitor:
Sony F520
P4 motherboard:
Asus P4T533-C
Athlon XP motherboard:
Asus A7N8X
Portable MP3 player:
iPod 20GB
Photo printer:
Epson Stylus Photo 1280
Pocket PC PDA:
Toshiba e740
Palm PDA:
Tungsten T
5.1 speakers:
Logitech Z-680
4.1 speakers:
Logitech Z-560
2.1 speakers:
Klipsch Promedia 2.1

Our current gaming favorites: *Age of Mythology, No One Lives Forever 2, Battlefield 1942*

Jedi Outcast Cast Out!

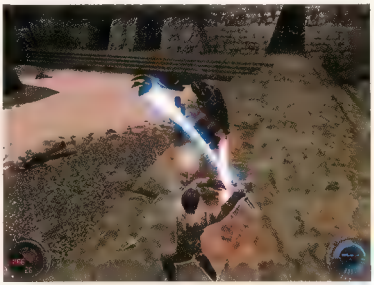
We had an interesting turn of events when we tried to benchmark the 3GHz Dell system this month—the Hyper-Threaded rig wouldn't run our custom *Jedi Outcast* test. It turns out that a bug in the 1.02a version of *Jedi Outcast* prevents the game from running on WinXP if the OS's multiprocessor core has been loaded (and the core loads when Hyper-Threading is enabled).

This isn't a new issue; when *Jedi Outcast* first came out, it had problems with dual-proc machines. The game's developers quickly issued a patch to fix the problem, and sure enough, newer versions of the game ran fine on our 3GHz Dell review system.

Unfortunately, the newer, patched versions of the game (v1.03 and v1.04) also have networking code updates that make timedemos recorded in earlier versions incompatible. In short, our custom timedemo—which we've been using since July 2002—is now officially broken.

Sure, we could re-record a new timedemo using version 1.04 of *Jedi Outcast*, but any results from this benchmark would be worthless when comparing old frame-rate scores with new ones. So, in order to eliminate any confusion, we've decided to drop *Jedi Outcast* as a review system benchmark. Starting next month, *3DMark2001* will be the only gaming test used for system reviews. We will, however, revise all of our system benchmarks soon, and hopefully *Unreal Tournament 2003* or *Doom III* will be used in *Jedi Outcast's* stead.

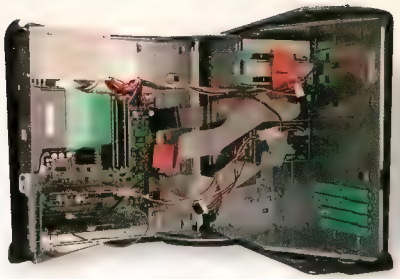
Lest you despair the death of our OpenGL videocard benchmark, remember this: When the ATI Radeon 9700 Pro videocard was released, *Jedi Outcast* effectively became a CPU benchmark; its value as a videocard benchmark was kaput. Prior to the 9700, frame rates in the *Jedi Outcast* benchmark were limited by the memory bandwidth of a system's videocard. But because the 9700 provides so much bandwidth, it's able to process all the 3D data a CPU can toss its way—and thus a system's CPU emerges as the new bottleneck in the test. For what it's worth, recent nVidia driver updates also push the GeForce4 Ti 4600 past the benchmark's memory bandwidth bottleneck.



Advances in hardware technology have rendered our *Jedi Outcast* videocard benchmark null and void.

Dell Dimension 8250

Another watershed moment in PC history



The 3GHz barrier is now officially broken. Our first specimen was delivered by Dell, in a Dimension 8250 host chassis. The system's 3.06GHz Pentium 4 also includes HyperThreading technology (more about this on page 70), and its overall performance was outstanding.

Dell quietly makes its way to 3GHz.

The 8250 offers *50 percent* more clock speed than the 2GHz zero-point systems that we built just six months ago. In *SYSmark2002*, the new Dell beat our zero-points by 40 percent—a nice, evenly scaled performance bump (though some of the credit must also go to the Dell's 533MHz system bus, 1GB of PC1066 RDRAM, and faster hard drive). We saw even better dividends in Adobe *Premiere*; in this test the Dell was almost 80 percent faster than the zero-point systems. We also saw near-perfect performance scaling in our *MusicMatch* MP3 encoding test. With 50 percent more clock speed, we saw a 54 percent increase in encoding power. This is a good sign that the P4 architecture still has legs, and that even higher clock speeds will yield very nice real-world performance dividends.

When we compared the 3GHz Dell with last month's 2.8GHz Adamant rig, we discovered an interesting anomaly: In *SYSmark2002*, the results were essentially a draw, but when we looked at each machine's individual Internet content creation and office productivity scores, we noticed that the Dell produced higher scores in the five content creation apps, but performed slower in the nine office apps. We suspect that the CPU-dependent content creation tests benefited from the Dell's clock boost, while the office app tests took advantage of the RAID 0 array in the Adamant box. The Dell features a 200GB Maxtor hard drive bearing an 8MB cache, but when it comes to raw horsepower, RAID wins.

Gaming performance was a bit troubling: The 3GHz Dell trailed the 2.8GHz Adamant by about 5fps in Game 4 of *3DMark2001 SE*, yet both systems run the same Radeon 9700 Pro videocard. Granted, the Adamant box gave us a lot of stability problems, and its videocard mip-map setting was for Best Performance, whereas the Dell's was set for Best Visual Quality, but the 5fps deficit still surprised us.

We expected the Dell to be tops in our now-CPU-dependent *Jedi Outcast* test, but, unfortunately, we ran into a snag. We couldn't run the game on the Dell without applying the latest patch from Lucasarts, and the patch breaks our timedemo, so gathering benchmark data was impossible. We can't knock Dell for the problem because the game runs perfectly fine with the patch, but we were disappointed by the conflict, as we expected to see the Dell's CPU strut its stuff (for more info on the benchmarking situation, see page 71).

OK, enough about CPUs. In the optical department, Dell includes a second-gen Philips 2.4x DVD+RW drive that supports DVD+R burning in addition to all types of CD burning. Dell has since switched to a 4x DVD+RW drive for the machine at no extra cost, but one was not available for our review. Dell also managed to snag Creative Labs' hot new Audigy 2 soundcard. This card adds support for Dolby Digital EX, DVD Audio, and the ability to record—yes, record!—in 24-bit audio. Display duties are handled by a beautiful 18-inch LCD that supports both DVI and analog, while audio output is owned by a hefty set of Altec Lansing ADA995 speakers.

But Dell's most impressive trick might actually be noise control. It seems like all of today's highest-performing machines scream like banshees, but the Dimension 8250 is as silent as a ghost.

If you want to boast the fastest gaming rig ever at your local LAN party, pass on the 8250. But if you want the rock-solid reliability of the Dell name with stellar performance to boot, the box is worth a look-see.

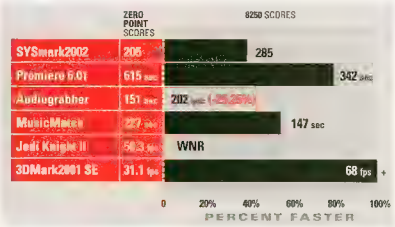
—GORDON MAH UNG

UNDER THE HOOD

THE BRAINS	
CPU	3GHz Intel Pentium 4 with HyperThreading
RAM	1GB PC1066 RDRAM (four 256MB sticks)
I/O ports	Eight USB 2.0, one FireWire, PS/2 mouse, PS/2 keyboard, parallel port, one serial port, mic input, VGA, DVI, three analog out, digital audio out
NETWORKING	
LAN	Onboard Intel 10/100Mbps Ethernet
DISPLAY	
Videocard	ATI Radeon 9700 Pro (with TV out)
Monitor	Dell 1800FP Ultrasharp LCD (18.1-inch viewable)
STORAGE	
Hard drive	200GB Maxtor MaxLine (7,200rpm, 8MB cache)
DVD+RW	Philips DVD+RW D-28 (2.4x DVD+RW)
DVD-ROM	Samsung SD-616T
SOUND	
Soundcard	Sound Blaster Audigy 2
Speakers	Altec Lansing ADA995 (5.1)
FINE DETAILS	
Case	Dell propr.etary
Fans/extras	Single 90mm case fan
Mouse	Logitech Optical
Keyboard	Dell with integrated volume and hotkeys
BUNDLE	

Windows XP Home, Sonic MyDVD, PowerDVD XP, Office XP Small Business Edition, Easy CD Creator 5.0, Image Expert 2000, VideoWave 4.0

BOOT: 31 sec. **DOWN: 10 sec.**



Our zero-point system includes: an Intel D850MV motherboard, a 2GHz P4 CPU, 512MB PC800 RDRAM, a GeForce4 Ti 4600 videocard, and a Western Digital 1000BB hard drive (2MB cache)

MAXIMUM PC VERDICT

DIMENSION 8250

DELL

+ THE DUDE

3GHz with HyperThreading motors past other P4 systems

– NIHILISTS

Sluggish frame rates in *3DMark2001* lowered our excitement level

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9

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Polywell 880NF2

Our kingdom for more horsepower!

The brand-new nForce2 chipset deserves a better home than the 880NF2.

We were intent on reviewing a system armed with the just-released nForce2 core-logic chipset, but we didn't expect to receive such a nutty configuration. This Polywell rig includes the nForce2 on a Leadtek motherboard, an Athlon XP 2700+, and an AGP 8x GeForce4 card. That's right, no 2800+ (do AMD's fastest CPUs even exist?), and no Radeon 9700 Pro videocard.

We're not thrilled about the videocard choice, but Polywell decided to push the AGP 8x spec, and it was the first vendor to offer us a system with an nForce2 board (nForce2 boards aren't yet available as stand-alone products), so we took whatever configuration the company deemed reviewable.

Leadtek's nForce board sports three FireWire ports (via an ACR card), onboard sound care of a Creative Labs 5.1 chip, and a 10/100 Ethernet chip. Strangely, the Polywell rig also includes a Sound Blaster Live! 5.1 sound-card, which bypasses the *more modern* audio technology located on the board!

Everything in the PC is set to stock frequencies—the CPU at 2.17GHz, the system bus at 166MHz, and the vidcard at 250/256.5. RAM timings are set aggressively (6-2-2), but the full gigabyte of DDR400 Corsair XMS memory seemed to handle it well. The videocard's Direct 3D mip-map setting was preset for Best Performance, but when we moved the slider to Best Image Quality, frame rates were just a bit slower in *3DMark2001 SE* (our benchmark chart reflects the Best Performance setting).

The Ti 4200 might be a budget card, and the 2700+ is certainly no barn-burner, but we still saw respectable performance in *SYSmark2002* and *Jedi Outcast*. *SYSmark2002* coughed up 253—that's 39 points better than what we got from last month's iBuyPower rig, which used the same 2700+ CPU but on a VIA KT400 chipset. You can assign some of the performance boost to Polywell's RAID setup, but a lot of the credit goes to the 128-bit dual-channel memory controllers on the nForce2 chipset. The Polywell also whipped out 74fps in *Jedi Outcast*, trumping iBuyPower by 13fps.

The rig's two 80GB/8MB cache Western Digital drives are striped in a RAID 0 formation via an Acard controller, and performed impressively during informal testing. CD burning duties are handled by Plextor's 48/24/48 drive, which won our 2002 Gear of the Year award and offers untouchable burn times. For some reason, however, the Poly's Plextor drive limits digital audio extraction to a prudent but unexciting 24x to preserve the quality of your rips. The upshot? It took us more than four minutes to extract a full audio CD, almost 40 percent longer than it takes with our aging zero-point system. And how's this for wacky? Instead of going with DVD+RW or DVD-RW, Polywell went with DVD-RAM! This format has a competitive feature set, but requires expensive media, and is essentially dead in the water. Fortunately, you can still burn write-once DVD-R discs.

Finally, Polywell opted for ViewSonic's wireless keyboard and mouse. Wireless input works fine for word processing and e-mail, but its response is too inaccurate for serious gaming.

In the end, however, the 880NF2's Achilles' heel is the Ti 4200 card—8x AGP or not. Falling below even the now-outdated Ti 4600, the 4200 is too old-school for serious consideration. Hopefully, our next experience with nForce2 will be with a stand-alone mobo review, and we'll be able to conclusively demonstrate its benefits over the KT400 chipset.

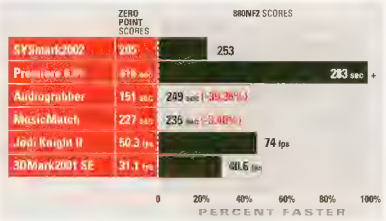
—TOM MCNAMARA

UNDER THE HOOD

THE BRAINS	
CPU	Athlon XP 2700+ (2.17GHz)
Mobo	Leadtek W.nFast K7NCR18D
RAM	Two 512MB PC3200 Corsair XMS
I/O ports	Four USB, three FireWire, PS/2 mouse, PS/2 keyboard, seria ports, mic input, VGA, DVI, S-video
NETWORKING	
LAN	Onboard nVidia MCP chipset (10/100)
DISPLAY	
Videocard	128MB Leadtek GeForce4 Ti 4200 (8x AGP)
Monitor	19-inch AOC 9GL
STORAGE	
Hard drive	Two 80GB Western Digital WD800JB in RAID 0
DVD-RAM	Panasonic LF-D311
CD-RW	Plextor 48/24/48
SOUND	
Soundcard	Sound Blaster Live! 5.1
Speakers	Creative Inspire 5.1 5300
FINE DETAILS	
Case	Skyhawk aluminum mid-tower case, 350W PSU
Fans/extras	Hard drive fan, 11-inch blue neon light
Mouse	ViewSonic wireless scroll mouse
Keyboard	ViewSonic wireless 104-key
BUNDLE	

Evolva, F-16 Aggressor, Icewind Dale, Jagged Alliance 2, MDK 2, Star Trek Voyager: Elite Force

HOOT: [illegible] DOWN: 70 secs



Our zero-point system includes: an Intel D850MV motherboard, a 2GHz P4 CPU, 512MB PC800 RDRAM, a GeForce4 Ti 4600 videocard, and a Western Digital 100GB hard drive (2MB cache)

MAXIMUMPC VERDICT

880NF2

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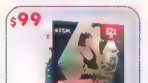

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Palm Tungsten T

Finally—a big leap forward in Palm innovation

Tungsten is famous for having the highest melting point of any metal. Maybe this is why Palm named its new PDA after the element: For years, the company has been under intense heat from its loyal user base to introduce not just another incremental upgrade, but something truly revolutionary, and with the new Tungsten T, Palm finally delivers.

Forged from years of development, the new PDA is unlike any Palm you've ever seen. For starters, Palm has ditched the Dragonball CPU that's graced every one of its PDAs since the original Pilot model, and is now going with a Texas Instruments ARM-based CPU ticking along at 144MHz (the OMAP1510 CPU is actually spec'd for 177MHz, but Palm slowed it down a bit). With this updated processor, the new OS5 is downright speedy. Applications and menus pop open without the lag that most of us Palm users have grown accustomed to. The new Palm also features an improved physical interface, as well as Bluetooth support for a new world of wireless possibilities.

THE SPECS	
CPU	44MHz Texas Instruments OMAP1510
Screen	2.25x2.25-inches, side-lit with 320x320 resolution, and 65,000 colors
Memory	16MB RAM
Storage	SDIO slot, Palm Universal Expansion Port
Communications	Bluetooth transceiver, IrDA

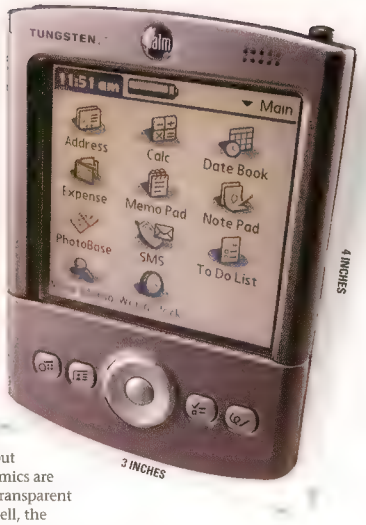
To shrink the Tungsten T, you simply slide the bottom portion of the unit over the Graffiti area. A transparent plastic cover snaps over the face, and gives you access to a control disc. That's right: The standard up-and-down button is gone. The control disc lets you move left/right/up/down, while a center button lets you select an icon or item that you've moved the cursor over. With the new interface, you can select an application, and drill down into it.

For example, with the address book, you could search through your contacts with one hand, and then dial your Bluetooth-enabled phone with a single touch of the center button. You could even take it a step further by mating your Bluetooth-enabled phone (maybe Ericsson's T68) with a Bluetooth headset: Just whip out your Tungsten T, touch-dial the phone, and then talk to your friend without ever taking your phone out of your backpack.

In its contracted form, the unit is slightly shorter than the M505, but also a bit thicker. Ergonomics are wonderful, and with its transparent cover and magnesium shell, the Tungsten T feels fairly durable, and we suspect it would be fine bouncing around loose in a bag or purse.

The much-anticipated OS5 from PalmSource is a slight letdown. We expected some of the essential features that you get from Pocket PC—such as the ability to see all of your appointments on start up, and the ability to play MP3 files—but they weren't there. The Tungsten T does support stereo output, but, oddly, there's no media player. Palm and PalmSource (the hardware and OS divisions are now separate companies) say they leave the platform open to user application development, and that they wanted the Tungsten T to be familiar to users of previous units. Nice try, folks, but we think these explanations are a cop-out. Still, for what it's worth, Palm does include DataViz's excellent *Documents-To-Go* app, as well as a mail client, Bluetooth chat programs, a microbrowser, and SMS messaging apps.

We were disappointed that the Tungsten T doesn't take advantage of OS5's support for high-res screens. Sony and HandERA PDAs let you display more icons on the screen, but the Tungsten doesn't. The Tungsten could also have benefited from a virtual Graffiti area like the one provided by Sony's Clie. The Tungsten's side-lit screen supports 65,000 colors and gets fairly bright, but it doesn't compare to the transflective screens of competitors.



Palm's new Tungsten T finally dumps the molasses-slow 33MHz Dragonball processor for an ARM-based CPU.

Fortunately, the Tungsten T uses the Palm universal expansion port so you can share the same cradle with old-school Palm users. Because of the OS switch, however, not all expansion devices will work without new drivers, though driver updates should be inevitable.

This review might read like a big list of complaints, but that's only because as diehard Palm users, we hold the company to the highest of all PDA standards. We think the Tungsten T is Palm's best effort yet, and a good sign that the brain trust is finally getting busy again after years of dormancy. The new CPU speed alone is worth the upgrade.

—GORDON MAH UNG

MAXIMUMPC VERDICT

TUNGSTEN T
PALM

+ LANTHANIDES
Small, easy to use, Bluetoothed, and fast.

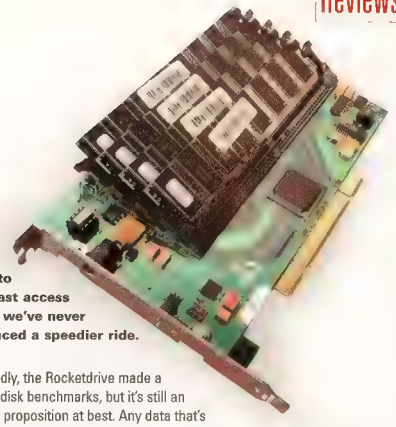
– ACTINIDES
Could use more onboard RAM, and the software package seems skimpy

www.palm.com
$500

9

Cenatek Rocketdrive

One small step for RAM, one giant step for storage drives



With up to 4GB of fast access memory, we've never experi-enced a speedier ride.

The Rocketdrive is the fastest storage drive we've ever tested—and it sure as hell should be, considering it costs $5,000 and uses solid-state PC133 SDRAM instead of magnetic platters for data storage. Indeed, you gain sheer, unadulterated speed across all operations, but 4GB of storage is a mere pittance these days, and your data is gone if someone kicks out the external power adapter when your PC is powered down.

Regardless of its impracticalities, the drive's performance possibilities are mind-boggling. Instead of storing your games, *Photoshop* swap file, or database file on a relatively pokey mechanical hard drive, you can load any of that data on the Rocketdrive to get all the speed of RAM combined with the utility of a hard drive. Beginning to see the picture?

In our drive tests, the Rocketdrive's performance lived up to its hype. In *HDTach*, sustained transfer rates reached 110MB/sec for reads, and 80MB/sec for writes. That's roughly twice as fast as what you'll get from a regular hard drive. And although these benchmark results translate into the type of performance you'd see from a striped SCSI array, the Rocketdrive's forte is random access operations, where it kicks total ass. Because the Rocketdrive installs in a PCI slot and has no moving parts, it doesn't have any measurable access time delay. This means that when a piece of data is requested from the Rocketdrive, it's essentially retrieved instantaneously—no drive head movement required. For example, in our *IOMeter* obstacle course, the Rocketdrive pulled nearly 10,000 input/output operations per second, while standard IDE drives typically pull fewer than 500. Server admins, take note.

Admittedly, the Rocketdrive made a joke of our disk benchmarks, but it's still an impractical proposition at best. Any data that's important enough to warrant the cost of a Rocketdrive is too important to risk losing. To this end, we wish the unit used some type of battery power (for times when the power adapter is yanked after system shutdown). An IDE version for true plug-and-play functionality would also be nice. Until then, just use the Rocketdrive for workstation/server duties, remember to back up all your important work, and be happy. Storage doesn't get any faster than this.

A MAN ON THE MOON: As fast as a rocket
A MAN MOONING: .. and as expensive as one. No backup.

—BRIAN LAM

MAXIMUM PC VERDICT: 9

$5,000, Cenatek, www.cenatek.com

"It may well be one of the finest mid-level two-channel gaming audio rigs currently on the market."

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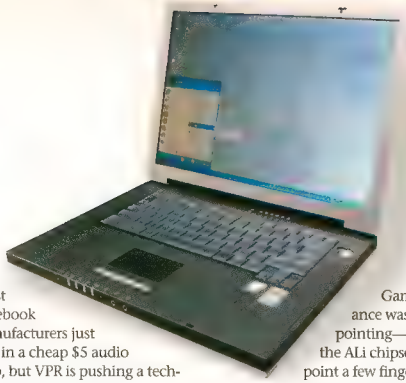
VPR Matrix 200A5

Believe it or not, Best Buy knows notebooks



Wide-screen wonder.

The question isn't "What is the Matrix?," it's "Who makes the Matrix?" Well, it turns out that VPR Matrix (that's VPR, as in "value, performance, and reliability") is Best Buy's retail brand.

And believe it or not, the company's first foray into notebooks is an impressive package. Pop one open at the local Starbucks (after you've finished shopping at Wal-Mart), and the other latte-sippers will steal a glance over the lids of their Dells, Compaqs, and Apples.

Designed by F.A. Porsche, the 200A5 is one sexy beast, though photographs hardly do it justice. Like Apple's Titanium PowerBook, the 200A5 has a wide-aspect ratio screen and a slot-fed optical drive—but the similarities end there. Inside the 200A5 is a 2GHz Pentium 4-M, and our review unit came with 512MB of 266MHz DDR, a 32MB GeForce4 420 Go, and an ALi ALLADiN-P4 chipset (M1671 North and M1533 South). ALi has been persona non-gratis with the desktop of late, so this notebook appearance is noteworthy.

To the best of our knowledge, the 200A5 is the first notebook to emphasize audio quality. Most notebook manufacturers just jam in a cheap $5 audio chip, but VPR is pushing a technology called Sonopür that makes the 200A5 one of the best-sounding portables around. In a nutshell, the notebook uses a standard SoundMax CODEC, but upsamples the audio using a proprietary circuit. Does 24-bit/196KHz audio make a difference? It certainly can. Of course, you'll never notice the superior sound if you stick with the tinny onboard speaker. But jack in a pair of high-grade Sennheiser headphones, and the difference is obvious. We compared Sonopür with the standard 16-bit/44.1KHz output of our stock Dell Inspiron 8200, and noticed an improvement. That said, the superior audio fidelity is best appreciated by audiophiles who listen to jazz or classical, so if you just plan to listen to White Zombie through $12 ear buds, don't expect a world of difference.

Performance-wise, the 200A5 was underwhelming. It was faster than our 1.7GHz Dell reference notebook, but slower than a similarly equipped Compaq notebook that we reviewed last November. In *SYSmark2002*, for example, the VPR Matrix was about 7 percent slower than the Compaq, despite the fact that both units run the 2GHz P4-M. We attribute the lag to the ALi chipset's hideous memory bandwidth performance: In the *SiSoft Sandra* benchmark, the 200A5 clocked in with just about half the memory bandwidth of the Dell and Compaq notebooks mentioned above.

Gaming performance was also disappointing—you can blame the ALi chipset, but let's also point a few fingers at the video subsystem's meager 32MB frame buffer. The display supports only a 1280x854 resolution, so we couldn't run our *Quake III Arena* test at 1280x1024. Using an external monitor, however, the notebook hit 38fps, which is 40 percent off the mark set by our zero-point Dell. But while gaming is a weakness, DVD viewing is superb. Our Dell reference system boasts more pixels with its 1600x1200 display, but the 200A5's wide-aspect ratio actually gives you more screen for movie viewing.

As for the little things: We're none too enamored with the cursor keys—they're too small for our fingers. The cool-looking but slim mouse buttons are also hard to get accustomed to. And while we love the convenience of the slot-fed DVD-ROM/CD-RW combo drive, the drive makes a horrible racket when discs are ejected or inserted. Finally, we weren't impressed with the range of the onboard Wi-Fi. In areas where the Dell would achieve full-strength signals, the VPR Matrix could muster just two or three out of five strength bars.

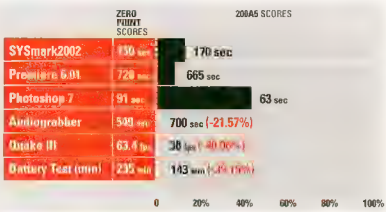
Criticisms aside, we were thoroughly impressed by the 200A5's cohesive design. It's not the right notebook for LAN party gaming (for this, we recommend Alienware's new 2.8GHz brute or Dell's updated Inspiron), but if you want a balance between portability and style, the VPR Matrix 200A5 is a good buy.

—GORDON MAH UNG

UNDER THE HOOD

THE BRAINS	
CPU/chipset	2GHz Pentium 4-M with 512K full-speed L2 cache (1.2GHz in SpeedStep mode) Ali ALADDiN-P4 M1671 chipset
RAM	512MB DDR266
I/O ports	One Cardbus PC Card slot, one VGA, one S-video, one parallel, two USB 2.0 ports, mic-in, headphone, IrDA, Fast Ethernet
NETWORKING	
Modem	Agere Systems WinModem 56K
LAN	National Semiconductor LAN-Express 802.11
DISPLAY	
Video	32MB GeForce4 420 Go
Monitor	15.25-inch, 1280x854
STORAGE	
Hard drive	IBM Travelstar 40GB (5400rpm)
CD-RW/DVD-ROM	Matshita CD-RW CW-8121 (8x DVD, 8x CD-R, 4x CD-RW, 24x CD-ROM)
SOUND	
Audiochip	SoundMAX with 24/192 circuit
TIPPING THE SCALES	
Lap weight	6.4 lbs
Carry weight	7.0 lbs
BUNDLE	
Windows XP Home, CyberLink PowerDVD XP 4.0	

BOOT: 61 sec **DOWN: 15 sec**



Our zero-point notebook is a Dell Dimension 8200, and includes a 1.7GHz P4-M CPU, 256MB DDR266, a 64MB 128-bit DDR GeForce4 Go graphics chipset, and a 5400rpm IBM Travelstar 60H hard drive

MAXIMUMPC VERDICT

200A5
VPR MATRIX

+ M1A2 ABRAMS

Stylish, great audio, nice wide screen, and relatively low price

– M551A1 SHERIDAN

Horrible memory bandwidth performance, and slow digital audio extraction.

www.vprmatrix.com

$2,400

8

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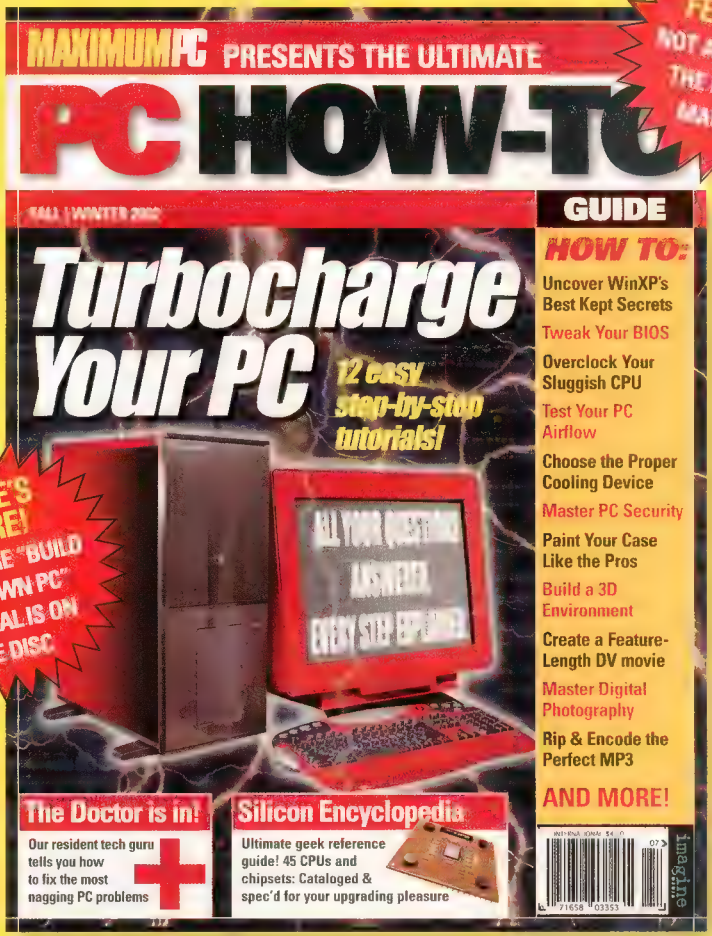
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Poke in the Token

Hardware security via your USB port

Not all of us trust "mere" security software to lock down our sensitive files and operating systems from intruders, mostly because passwords can be hacked, forgotten, or simply tricked out of us. So let's take a look at two security packages that combine software-based system protection with USB hardware keys.

—TOM MCNAMARA

AUTHENEX A-KEY WITH SECURE PRIVACY 2.0

The A-Key system pimps three main features: An advanced encryption standard mechanism to lock down files, an e-mail encryption scheme called EDSKI, and a software-based password lockbox that can contain logins for services such as online banking and purchasing. You plug in the USB token, open up the *Secure Privacy 2.0* software, and enter a password to access all these features. You can also encrypt and decrypt by right-clicking on files in Explorer (after plugging in the token and entering your password). If the USB token is removed from its port, all protected data is untouchable, even if you have a password.

This all sounds good on paper, but the frequency with which you must enter your password becomes more annoying than reassuring, and this is the package's fatal flaw. User-selected locations for encryption and decryption must be specified each time, and if you misspell your password a few times in a row, things get, well, complicated (more on this below).

The EDSKI program doesn't fare much better. It's an e-mail front-end that uses *Outlook* or *Outlook Express* as its engine. The menus are confusing at first, and require digging through the help file. Your recipient must also be using EDSKI to read your message and open attachments, and EDSKI only works with the *Outlook* programs integrated into *Internet Explorer 6* or later. Even if you choose not to use EDSKI, you must still install *IE6*.

The software's *Password Manager* module can store up to 100 passwords for online accounts, but its repetitive rigmarole is a royal pain: Plug in the token, enter the password for *Secure Privacy*, then enter it again for *Password Manager*. If you forget a password, recovery requires registration and the answers to five secret questions that you select. If you fail any question three times, you must wait 24 hours to try again. If you fail again, you have no recourse.

The A-Key is so replete with inconveniences, we started to rethink our need for privacy.

There is no contact information anywhere in the documentation, and the URL listed for a FAQ pointed to a page that doesn't exist. If you lose just the key, a replacement costs $25—but you must go through the questionnaire gauntlet to obtain it. The upshot? The A-Key system is more trouble than any *Maximum PC* editor is willing to endure.

MAXIMUM PC VERDICT: 6

$50, www.authenex.com

GRIFFIN TECHNOLOGIES SECURIKEY 1.0

While A-Key attempts to be an all-in-one encryption suite, *SecuriKey* focuses on securing the boot-up process. Like *Secure Privacy*, the *SecuriKey* software didn't allow us to choose our own install path, but at least the SecuriKey manual includes detailed contact information should the process be at all baffling.

Installation was quick and painless, and *SecuriKey* doesn't require a separate password; it simply integrates with the Windows logon process. Plug in the key before you load Windows and log on like normal. Keep the key in the USB port, and remove it to lock down the system. During installation, you're given four options for what to do if the key is removed from its USB port while the computer is on: You can lock the PC (default), send it to Standby mode, log the user off, or shut down the computer, all automatically. Amazingly, the package even comes with an extra key!

The software interface isn't mentioned in the bundled manual, but there's a fairly informative Help file accessible from the main window. Besides locking down the OS in its entirety, you can define security attributes for individual files (full-access, read-only, or full-blockage). You can also specify which user accounts should receive access. Unfortunately, the file-access system supports only NTFS, and *SecuriKey* will run on only Win2000 and WinXP.

The largest catch, however, is the price tag—an MSRP of no less than $240, although you can find the package for $140 at Meritline.com, one of Griffin Technologies' approved distributors.

MAXIMUM PC VERDICT: 8

$240, www.griftech.com

It costs a pretty penny, but the SecuriKey hardware/software combo provides easy and effective data protection.

Maxtor 5000XT

An easy-to-use 250GB backup drive puts the *max* in Maxtor

How many things can you think of that require just one finger to accomplish? Maxtor's 5000XT now adds data backup to the list.

Two hundred and fifty gigabytes. That could hold DVD rips of an entire season of *X-Files*, or the entire first draft of the Human Genome Project—with 350 backup copies and room left over for illustrations. That's just a couple of the interesting possibilities open to you with Maxtor's titanic 250GB 5000XT external hard drive.

Of course, you'll probably be more interested in just backing up the data on your PC. Fair enough. To that end, Maxtor has not only provided a drive with enough room to back up your internal drive several times over, but also a OneTouch pleasure button on the front bezel that initiates the backup process. It's as simple as this: Plug the 5400rpm 5000XT into a FireWire or USB port (either USB 2.0 or 1.1 is acceptable), install the software, and push the button. This automatically launches the bundled *Retrospect Express* and performs an incremental backup of your C: partition. (After initially duplicating all your data, incremental backups then archive just those files that have been altered or added since.)

We'll say this right off the bat: For some strange reason, we prefer mashing a button at the end of the day to having some scheduling applet do the work for us. There's something satisfying and confidence-building about launching the process on your own, whenever and however often you like. But *Retrospect Express's* one-button simplicity comes at a price. The script backs up only a single partition (the C: drive by default). You can easily change the script executed by the OneTouch button to back up multiple partitions, but in order to make this work, you'll have to reformat the drive from FAT32 to NTFS (remember that FAT32 restricts file sizes to 4GB). These multiple-partition backups will be compressed and folded into a single file, so you can't pluck out a file or two at your leisure. *Retrospect Express* also allows you to schedule backups, if that's your thing. And it's a snap to change the OneTouch script to back up only specific folders on one partition, such as "My Documents" and "Incriminating E-mail." It's not a complete system backup panacea, but the 5000XT is big *(really big)*, simple, and supports fast USB 2.0 transfers. We approve.

STAR 69: 250GB! And the 5000XT's OneTouch button not only makes backing up data a snap, but also serves as a gentle reminder to do so often.
FAT32: The bundled software can't back up multiple partitions with the same convenience and accessibility.

—LOGAN DECKER

MAXIMUM PC VERDICT: 8

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KWI KT-436B-WM - $174.95
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Lian-Li PC-61
Aluminum Mid-Tower, USB 2.0, 4 fans $137.95
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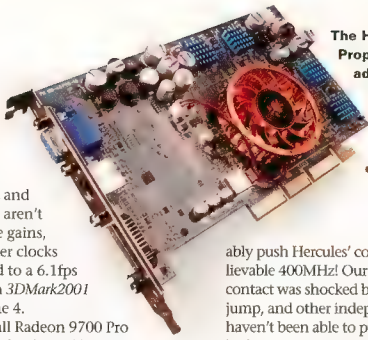
3D Copycats

Third-party Radeon 9700s vs. ATI's original product



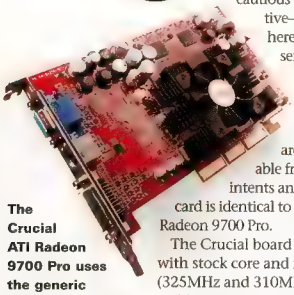
The Hercules 3D Prophet 9700 Pro adds value to an otherwise generic Radeon 9700 by including awesome cooling.

If you're dying to get your hands on a Radeon 9700 Pro videocard, you don't *have* to buy it from ATI. The Canadian graphics chip manufacturer is now selling its top-of-the-line 3D accelerator to third-party board makers. Do these cards offer extra features? Lower prices? Anything special? We snagged a pair of ATI-powered boards from Hercules and Crucial Technology to find out.

—WILL SMITH

CRUCIAL ATI RADEON 9700 PRO

Crucial Technology is best known for selling high-end memory modules, so it's not surprising that the company's foray into the vidcard biz is cautious and conservative—what we have here is the quintessential ATI reference design. The cooling, the memory, and the board layout are indistinguishable from ATI's. For all intents and purposes, this card is identical to the original Radeon 9700 Pro.



The Crucial ATI Radeon 9700 Pro uses the generic reference design, but that doesn't keep it from being fast!

The Crucial board is clocked with stock core and memory speeds (325MHz and 310MHz, respectively), yielding benchmark scores that are virtually on par with those posted by our ATI reference board. The Crucial board, however, proved to be a more able overclocker than our ATI board. With stock cooling, we were able to get this little puppy to a 364MHz core and 330MHz memory. While 39MHz and 20MHz aren't massive gains, the faster clocks did lead to a 6.1fps boost in *3DMark2001 SE* Game 4.

Like all Radeon 9700 Pro boards, the Crucial board supports multiple monitors and TV-output. It's equipped with 128MB of 256-bit DDR SDRAM in a BGA form-factor, and requires supplemental power courtesy of a floppy power connector.

The best thing about the Crucial board is its price. For a mere $350 bucks you can take this guy home. That's $50 cheaper than the ATI reference board.

HERCULES 3D PROPHET 9700 PRO

Although Hercules uses the same layout design as ATI and Crucial, it went the extra mile and added supplementary cooling and included a kick-ass software bundle. The Prophet 9700 Pro is stock-clocked at 325MHz core/310MHz memory, so why put heatsinks on all eight memory chips—nudge, nudge, wink, wink? Call us nutty, but we accepted Hercules' thinly veiled challenge and cranked the memory bus to 360MHz!

Hercules also modded out the GPU's cooling system. The graphics chip itself is chilled by an upgraded high-speed fan/heatsink combo, while the area of the board directly underneath the GPU gets its own heatsink. This comprehensive cooling scheme allowed us to reliably push Hercules' core to an unbelievable 400MHz! Our Hercules press contact was shocked by our 75MHz jump, and other independent testers haven't been able to push the core so high, so we can only conclude that we received a very special piece of silicon. Nonetheless, overclocking bumped our *3DMark2001 SE* Game 4 score from 66.3fps to 79.8fps. For what it's worth, stress-testing of the OC'd board revealed temperatures hovering around 130° F near the CPU's posterior heatsink—about the same temperature as the Crucial board, which ran 36MHz slower.

The Prophet 9700 Pro includes all the amenities of the Crucial board: multi-monitor support, S-video output, and a DVI plug with DB-15 adapter. Hercules even tossed in a copy of *Morrowind*—a wise extra considering that the Prophet costs about $40 more than ATI's own 9700 Pro product. Still, if you want to overclock but don't want to mess with aftermarket cooling products, this is the best Radeon 9700 Pro card around.

—WILL SMITH

MAXIMUMPC VERDICT

Radeon 9700 Pro
CRUCIAL TECHNOLOGY

+ 3DFX VOODOO 2
Fast and cheap

− 3DFX VOODOO 3
Just a plain, old-fashioned reference design.

www.crucial.com
$350

9

MAXIMUMPC VERDICT

3D Prophet 9700 Pro
HERCULES

+ nVIDIA RIVA TNT
Heatsinks on all the important components make this the best overclocking board we've seen yet

− nVIDIA RIVA 128
The newest Prophet is a little pricey

www.hercules.com
$450

10

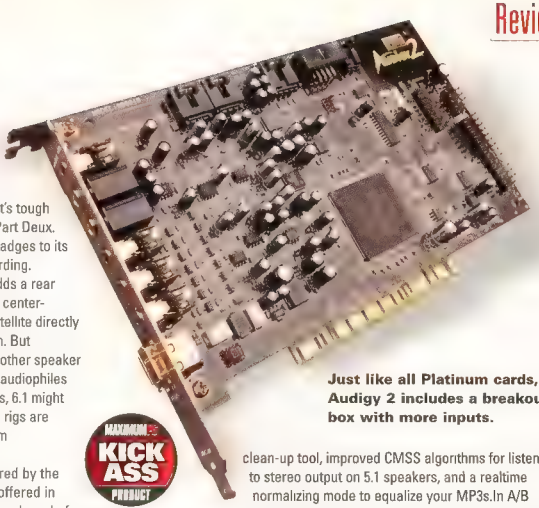
DARE TO COMPARE: RADEON 9700 COPYCATS

	Hercules 3D Prophet 9700 Pro		Crucial Radeon 9700 Pro	
	No AA	2x AA	No AA	2x AA
3DMark2001 SE Game 2	**116.5**	**95.5**	116.3	92.8
3DMark2001 SE Game 4	66.3	51.3	**66.4**	51.3
Dungeon Siege 1600x1200	57.8	**57.8**	**58.6**	57.6
UT 2003 1600x1200	48.1	46.6	**48.9**	**47.1**
Quake3 MPC Demo	102.6	102.3	**104.1**	**103.8**

Best scores are bolded. All benchmarks were run with stock 325/310 clocks, and at 1280x1024 in 32 bit color with vsync disabled, unless otherwise noted.

Creative Labs Audigy 2 Platinum

The best consumer soundcard just got a whole lot better



Just like all Platinum cards, the Audigy 2 includes a breakout box with more inputs.

When you make the best consumer soundcard on the market, it's tough to top yourself, but Creative Labs has succeeded with Audigy Part Deux. Already an Eagle Scout, the Audigy 2 adds several new merit badges to its chest: support for DVD-Audio, Dolby Digital EX, and 24-bit recording.

Dolby Digital EX is your ticket to 6.1 surround sound, which adds a rear center-channel speaker to the existing 5.1 mix. Just as the front center-channel in a 5.1 system fills gaps in your soundscape, a sixth satellite directly behind your head helps audio dance around you in stark realism. But considering all the wiring mess, is it worth the trouble to add another speaker behind your head? For most of us the answer is no, but for anal audiophiles who just can't get acceptable surround sound with five satellites, 6.1 might make sense. Just note that 6.1 speaker systems intended for PC rigs are currently rarer than steak tartare, and 6.1 content is also far from standard.

DVD-Audio is probably the neatest of the new features offered by the card. Don't confuse this spec with the surround-sound audio offered in the typical DVD movie. DVD-Audio is actually a format for a new breed of music discs—it provides high-res 24-bit/192KHz sound for stereo output, and 24-bit/96KHz for surround-sound output (that's right: 5.1 sound for regular music!). Having heard it ourselves, we can tell you that the improved fidelity of DVD-Audio makes today's 16-bit/44.1KHz audio CDs sound like bad MP3s. We're not sure where DVD-Audio will be in two years, and how many record companies will support it, but with the Audigy 2, you at least get it for "free" without having to buy a stand-alone DVD-Audio playback device.

Creative has finally added 24-bit recording to the Audigy series, but you can't record in 24-bit using ASIO drivers (which reduce latency). Other notable features include a software bundle that's less annoying, an easy-to-use audio clean-up tool, improved CMSS algorithms for listening to stereo output on 5.1 speakers, and a realtime normalizing mode to equalize your MP3s.In A/B audio-quality testing, the Audigy 2 was a cut above all competing consumer cards. If you already own an Audigy, you don't need to dump it, but if you're considering an upgrade from onboard audio or an old 16-bit soundcard, the Audigy 2 is your only logical choice.

MAXIMUM PC KICK ASS PRODUCT

BLUE OYSTER CULT: 24-bit recording, DVD-Audio, 6.1 support, less cluttered applets.

DAY-OLD OYSTERS: ASIO drivers don't support 24-bit recording.

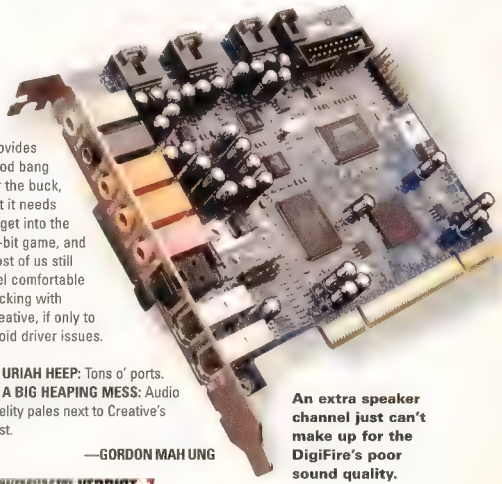
—GORDON MAH UNG

MAXIMUM PC VERDICT: 10

$200 (includes Internal Drive I/O box), www.soundblaster.com

Hercules DigiFire 7.1

Extra channels and extra ports, but no extra audio fidelity



An extra speaker channel just can't make up for the DigiFire's poor sound quality.

More is better, right? The Audigy 2 has just one FireWire port, but the DigiFire 7.1 provides two. The Audigy 2 comes with 6.1 support, but the DigiFire 7.1 outdoes it by supporting *two* rear satellites. And if you think that running eight separate speakers is nuts, the DigiFire offers driver support so that you can use the fourth mini-jack for headphone output instead.

Unfortunately, Hercules' "more is better" philosophy didn't translate over to audio fidelity: The DigiFire 7.1 supports just 20-bit/48KHz output, and recording is limited to 18-bit/48KHz. In a three-way sound comparison that included a Sound Blaster Live! and Audigy 2, the DigiFire 7.1 fared well against the Live!, but the Audigy 2's higher-res audio made the other two cards sound downright mushy. Even the relatively indelicate sound of weapons fire sounded noticeably better on the Audigy 2. Will you ever notice? Probably not, unless you use an A/B switch to compare the DigiFire 7.1 with an Audigy 2.

The DigiFire 7.1 is powered by a Cirrus Logic CS4624 DSP, which was first introduced almost four years ago when 400MHz Pentium IIs ruled the roost. The chip is stale, but not so underpowered that it will affect your 3D frame rates during gaming. Given its low price, this card will likely compete with the original version of the Gamer Audigy, which can be found for as little as $75 in OEM trim. Unless the Optical SPDIF, extra FireWire port, or 7.1 support appeals to you, you should go with the Audigy. Hercules provides good bang for the buck, but it needs to get into the 24-bit game, and most of us still feel comfortable sticking with Creative, if only to avoid driver issues.

URIAH HEEP: Tons o' ports.

A BIG HEAPING MESS: Audio fidelity pales next to Creative's best.

—GORDON MAH UNG

MAXIMUM PC VERDICT: 7

$85, www.hercules.com

Logitech Freedom 2.4 Cordless Joystick

Sturdy, agile, cordless—it's simply the best

The Logitech Freedom 2.4 delivers gamers from cord-based entanglements.

Odds are that every *Maximum PC* reader has the same problem: Thanks to all the gamepads, mice, keyboards, digital cameras, speakers, MP3 players, and networking equipment you've got hooked up, there's a rat's nest of wires behind your PC. Wireless peripherals are the obvious solution, but no hardcore gamer would trust his online reputation to a flaky wireless joystick, would he?

But what if the stick wasn't flaky? We've been using the Logitech Freedom 2.4 Cordless Joystick for about a month now, and from a reliability standpoint, it's virtually indistinguishable from a wired joystick. Its 2.4GHz wireless connection to your PC is every bit as responsive and sensitive as the cable that gets wrapped around your chair and trips you when you stand up.

Because it's wireless, the Freedom 2.4 relies on three AA batteries for power—and they don't provide enough juice for force-feedback effects, so you can cross that feature off your list (a non-issue for the many people who just don't care for FF). The good news is that the batteries provide a sturdy ballast for the base and prevent it from sliding around on most desks.

We were especially impressed with the three-axis stick itself. It sports six buttons, including the trigger and an eight-way hat switch. All the buttons are easily accessible, even for a gamer with unusual hands (large, small, it doesn't matter). Along with an analog throttle, there are four more buttons on the stick's base.

This is the perfect stick for the casual joystick gamer. Anyone who likes to hop into a Spitfire in *Battlefield 1942*, play an occasional round of *Crimson Skies*, or enjoy space-based slaughter in *Independence War* will find this stick to be perfectly suitable. That said, flight-sim fanatics will be better served by picking up a more "realistic" controller with more buttons and hat switches.

—WILL SMITH

⊕ **A-10 WARTHOG:** A great wireless joystick with more than enough options for any arcade-style flyer.
⊖ **B-1A LANCER:** Wireless design precludes force feedback. Not optimal for hardcore flight sims.

MAXIMUM PC VERDICT: 8

$70, Logitech, www.logitech.com

Creative Labs Nomad Jukebox Zen MP3 Player

The Zen bulks up, slims down, but still gets KO'd by the iPod

The Creative Labs family of MP3 players—from the tiny, driverless MuVo to the feature-packed Nomad Jukebox 3—is a formidable one. The new Nomad Zen player sits neatly between these two Kick-Ass siblings, packing a mammoth 20GB hard drive into a pocket-size case with two connection options (FireWire and USB 1.1). But comparisons with a similar product that's nearly perfect (read: iPod) are unavoidable, and that's where the shiny and handsome Zen loses some of its luster.

While the Zen is small enough to fit comfortably in one hand, the iPod is smaller and much lighter, thanks to its lithium-polymer battery (the Zen uses the heavier lithium-ion technology). The Zen's buttons seem arbitrarily arranged, which makes for frustrating guesswork when you're trying to operate the playback controls when the unit is in your pocket. Track and playlist navigation are handled via a small scroll wheel at the top-right of the player. The Zen relies on ID3 tags for organization, but if your tags aren't in order, you could find yourself using the scroll wheel a lot more than you'd like.

The player's sound was mushy around the low-end, but we were able to fix it with some tweaking of the four-band graphic EQ. That was lucky for us, because the equalizer's presets are disappointing, delivering only subtly different shades of blah.

As with the Nomad Jukebox 3, you have to use a special bundled application called *File Transfer Manager* to transfer data files with the Zen. No, you can't simply drag and drop. And it gets worse: If you want to upload your files to another PC, you have to carry around a floppy disk with *File Transfer Manager* on it. Even the iPod allows you to transfer data files through Explorer!

The Zen is still a very good, low-priced player with tons of storage, and it can even be recharged through the USB connection. But it's not at the top of its class, and coming from Creative Labs, that doesn't make any Zense.

—LOGAN DECKER

⊕ **TRANSCENDENTALISM:** FireWire and USB 1.1 connections. Rechargeable through the USB port.
⊖ **TRANSVESTITISM:** The Zen requires a special app to transfer data files—conduct unbecoming a Kick-Ass product. The bass is a little soft. Overall, it's second fiddle to the iPod.

MAXIMUM PC VERDICT: 8

$350, Creative Labs, www.nomadworld.com

Go ahead—throttle up the bitrates. With 20GB of storage and FireWire and USB connections, there's nothing holding you back.

Peripheral Potpourri

Will Smith cooks up a hardware smorgasbord

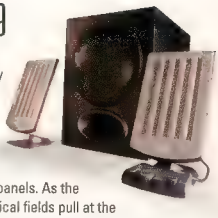
Belkin OmniView SOHO 4-Port KVM Switch

If you have multiple PCs but only one monitor, you might consider a keyboard/video/mouse switch. This USB-based Belkin switch lets you share a single monitor, USB keyboard, USB mouse, and even a speaker rig among as many as four PCs. Naturally, you can't use all four computers at the same time, but you can instantly switch between any of them at will. We were able to run PCs that were as many as 10-feet apart using the Belkin cable kits (sold separately). Unfortunately, the switch isn't suitable for PCs that you use to play first-person shooters. When you hold down a key on the keyboard for more than a few seconds, the KVM switch stops sending a signal to your PC. That means if you're pressing W to run forward, your movement will stop after a few seconds. Belkin is working to remedy the problem. Monitor image quality was indistinguishable from what we received from straight-through cabling, and this Belkin switch will even let you share other types of USB devices—game controllers have a good chance of working, but you can forget about storage devices. A pass-through input also lets you share a single speaker set, which is unusual for a KVM.

MAXIMUM PC VERDICT: 9

$170 (plus $50 for cables per PC), www.belkin.com

Monsoon Planar Media 9

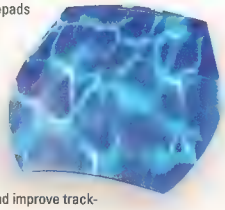


We've always been skeptical of flat-panel speakers. Even though they're conveniently sized and look futuristic, they usually have problems accurately reproducing sound. Instead of vibrating a paper cone at high speeds to produce sound, flat-panels rely on a very thin, light diaphragm that's sandwiched between two electrically-charged panels. As the panels are charged, their alternating electrical fields pull at the charged inner diaphragm, and sound is produced. Because the diaphragm is lighter than a traditional speaker cone, it's able to respond much more quickly and can produce far crisper sound. The downside is that the diaphragm can't physically move enough to generate low-frequency bass sounds. All of which brings us to the latest flat-panel rig from Monsoon, which sounds better than any flat-panel setup we've heard before, but isn't quite perfect. The PM9s use a dedicated subwoofer with a 6.5-inch driver to boost the otherwise weak bass reproduction of the panels. For the most part, the scheme is successful: Sound quality is great (mids and highs are especially crisp), and the PM9s create a rich, lively, balanced sound field. The only flaw these speakers exhibit is some bass rattle when cranked well beyond normal listening volumes. Volume, power, and bass controls are located on a separate control pod that can be mounted under either of the satellite speakers.

MAXIMUM PC VERDICT: 8

$100, www.monsoonpower.com

3M Precise Mousing Surface Optical



We've tested a lot of "gaming" mousepads over the years, and while every editor has a different opinion about what makes the perfect "gaming" pad, most of us agree that the 3M Precise Mousing Surface stands out among the rest. For starters, this latest 3M pad is specifically designed to work with optical mice. Its surface is covered by a grid of tiny pyramid-shaped bumps, which trap dust and debris, and improve tracking for regular mice. But underneath the bumps is a patented reflective surface that's supposed to assist tracking for mice with optical sensors. Unlike most other mousepads, the 3M pad is also very thin—less than six-hundredths of an inch. It's so thin that it's almost like mousing on your desktop, which helps prevent mouse-related ergonomic injury. Furthermore, its slightly sticky bottom surface gently adheres to your desk, keeping the pad from losing traction even when you're mousing vigorously. If you're still using the cloth-covered neoprene pad that came with your computer, grab one of these puppies and see if your *Counter-Strike* game isn't better. Our experience tells us the 3M pad really does improve tracking, all its voodoo science notwithstanding.

MAXIMUM PC VERDICT: 9

$20, www.3m.com

Electro-Voice SonicXS 2.1

Electro-Voice has been making speakers for concerts, clubs, and other professional venues for 75 years. Now, it's entering the PC market with the SonicXS 2.1 system. This is a bare-bones speaker rig that produces great sound, but at a hefty cost. The SonicXS uses a traditional satellite design—a 1-inch horn tweeter complemented by a 4-inch driver. The large satellites crank out a whole lot of sound, with excellent clarity and spatialization. They serve admirably in the near-field environment around a PC, but they aren't just near-field speakers. These suckers get really, really loud. The subwoofer is equally impressive. It sports a 6-inch long-throw, front-mounted driver. The sub's port is on the bottom, which serves to conceal any port hiss without affecting bass quality. Our only complaint with the sub is that it can't handle low frequencies at high volumes. We expect to be able to crank a $200 2.1 set all the way to 11 without any sound degradation. While we love the extra usability that the headphone jack, auxiliary input, and mic jack provide, we were shocked and appalled by the pathetically short speaker wires—they're just 5-feet long! The SonicXS 2.1 is a good first attempt at PC speakers, but the system isn't quite Kick Ass material.

MAXIMUM PC VERDICT: 7

$200, www.electrovoice.com

Combat Flight Sim 3: Battle For Europe

High-calorie dogfighting

When things blow up in this game, they blow up real good. Here is a Mosquito fighter-bomber succumbing to the advances of a German Focke Wulf fighter.

The latest chapter in Microsoft's 4-year-old *Combat FlightSim* franchise is a study in contrasts. Ambitious as hell, yet buggy as all get-out; gorgeous to behold, yet laced with visual flaws; *Combat Flight Simulator 3* skirts the fine line between "that next big sim" and not-ready-for-prime-time bloatware.

WWII aerial combat sims have been a staple of the flight simulation genre for more than a decade.

CFS3-02.BMP – In addition to the usual Spitfires and Messerschmitts, CFS3 also gives you rare birds like this experimental German Go 229A "Flying Wing." And those clouds are absolutely to die for!

But ever since *IL-2 Sturmovik* rolled out of the hangar in late 2001 and immediately began flying circles around *Combat FlightSim 2*, the service ceiling for prop sims has been elevated to a lofty new altitude. The Microsoft boys are countering with *CFS3*, and everything about this ambitious new sim—from its immersive, dynamic campaign to its powerful new graphics engine—leaves little doubt that Microsoft is seeking to establish complete air supremacy this time around.Set in post-1943 Europe, *CFS3* lets you fly up to 18 different aircraft (34 if you count model variants) for the U.S.A.F., Luftwaffe, or RAF. Quick Combat, Single Missions, and Multiplayer options (for up to 16 players) are available, but the real meat of the game is its deep and richly textured campaign structure.

Persistent ground and air battles constantly swirl around you as you fly your sorties, and your squadron's successes and failures have a discernable impact on the ebb and flow of the overall war. In addition to the usual medals and promotions you receive, you can also improve your pilot character's G-tolerance, vision, and health statistics by accumulating experience points.

The flight models of the various aircraft—which include the usual Spitfires and Bf-109s, as well as multi-station bombers and formative jet fighters like the experimental Gotha "Flying Wing"—are quite solid for the most part. Their behavior, however, does get surprisingly floaty and unconvincing when each plane is pushed to the edge of its flight envelope. The computer-controlled pilots are similarly capricious. Although your AI opponents will dish out challenging aerial fencing matches, and your wingmen respond smartly to your commands, the AI bomber pilots routinely insist on pitching their heavy B-25 Mitchells into an absurd dive bombing maneuver whenever they attack enemy ground targets!

A spanking-new graphics engine delivers all of this frantic aerial combat action but, unfortunately, the engine appears to be the source of the sim's biggest problems. While some of the DirectX 8.2 visuals are positively gobsmacking—the spectacular volumetric clouds, weather, and pyrotechnic effects are among the best we've ever seen—there are also a number of serious hiccups and blemishes in the game's graphic coding. For example, a *FlightSim 2002*–inspired automatic scenery generator will dress up the surrounding terrain with trees and buildings, but as soon as you point your nose down to enjoy any of this target-rich environment, a horrific stutter kicks in and instantly and irretrievably destroys any sensation of fluid flight. The sim also rejects many ATI Radeon accelerator cards as "unsupported" (we got our 9700 Pro to work, but only after a lot of tweaking), and nVidia-equipped systems are wont to cough up graphic-anomaly hairballs.

But despite its many problems, experienced hardware gurus will likely find ways to tweak *Combat Flight Simulator 3* into reasonably playable form right out of the box. If that doesn't appeal to you, however, then you might want to consider waiting until either Microsoft releases a patch or the third-party mod community whips the title into shape.

—ANDY MAHOOD

MAXIMUMPC VERDICT

COMBAT FLIGHT SIMULATOR 3
MICROSOFT

+ DIRECT HIT

Rich, dynamic campaign, marvelous pyrotechnics, and the most spectacular looking clouds that you've ever set eyes on.

– FLAMEOUT

Buggy as hell, game-killing stutter problem, and numerous graphic, AI, and flight model issues

www.microsoft.com/games
$50

6

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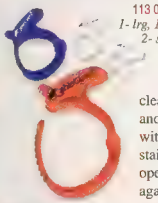

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120GB	7200rpm	ST3120023A	★$170

I B M

60GB	7200rpm	07N9212	$101
80GB	7200rpm	07N9685	$116
120GB	7200rpm	07N9214	★$164
180GB	7200rpm	07N9216	$289

SAMSUNG

20GB	7200rpm	SP2001H	$73
40GB	5400rpm	SV4012H	$79
40GB	7200rpm	SP4002H	★ $84
60GB	5400rpm	SV6003H	$98
80GB	7200rpm	SP8004H	$110
120GB	5400rpm	SV120AH	$140

Western Digital

20GB	7200rpm	WD200BB	$65
40GB	7200rpm	WD400BB	$82
40GB	7200rpm	WD400JB	$88
60GB	7200rpm	WD600BB	$94
80GB	7200rpm	WD800BB	★$109
80GB	7200rpm	WD800JB	$125
120GB	7200rpm	WD1200BB	$165
120GB	7200rpm	WD1200JB	$179
160BB	7200rpm	WD1600BB	$237
180GB	7200rpm	WD1800BB	★$295
180GB	7200rpm	WD1800JB	$315
200GB	7200rpm	WD2000BB	$315
200GB	7200rpm	WD2000JB	$349

2.5" IDE for Laptops

20GB	Toshiba	9.5mm	4200rpm	HDD2168	★ $96
20GB	IBM	9.5mm	5400rpm	07N9481	$115
20GB	Hitachi	9.5mm	4200rpm	DK23DA20F	$92
30GB	IBM	9.5mm	4200rpm	07N8326	$135
30GB	Hitachi	9.5mm	4200rpm	DK23DA30F	$129
40GB	Hitachi	9.5mm	4200rpm	DK23DA40F	$151
40GB	IBM	9.5mm	4200rpm	07N8327	★ $153
40GB	IBM	9.5mm	5400rpm	07N9482	$164
40GB	Toshiba	9.5mm	5400rpm	HDD2171	$160
60GB	IBM	12.5mm	5400rpm	07N8328	$340

2.5" to 3.5" Adapter Kit & Bracket $15

Sound Cards

Creative Labs Audigy 2 Platinum is also available in Black, Silver, Blue, Yellow & Green
Audigy 2 Platinum Black Bezel $19

Creative Labs	Audigy X Gamer	$89
Creative Labs	Audigy MP3	$89
Creative Labs	Audigy 2	$115
Creative Labs	Audigy 2 Platinum	$180
Creative Labs	Audigy 2 Platinum Ex	$221
Creative Labs	Sound Blaster Extigy	$133

SCSI Hard Drives

External+$99 SCA versions available at same price.

MAXTOR

18.4GB	10K Ultra160	KW018L2	8mb	$139
18.4GB	10K Ultra320	KU018L2	★ 8mb	$179
36.7GB	10K Ultra160	KW036L4	8mb	$230
36.7GB	10K Ultra320	KU036L4	★ 8mb	$266
73.4GB	10K Ultra160	KW073L8	8mb	$513
73.4GB	10K Ultra320	KU073L8	★ 8mb	$561

SEAGATE

18.4GB	7K Ultra160	ST318438LW	2mb	$145
18.4GB	15K Ultra160	ST318406LW	4mb	$169
18.4GB	15K Ultra160	ST318452LW	8mb	$233
18.4GB	15K Ultra320	ST318432LW	8mb	$233
36.9GB	7K Ultra160	ST336938LW	★2mb	$213
36.7GB	15K Ultra160	ST336706LW	4mb	$265
36.7GB	10K Ultra320	ST336607LW	★8mb	$265
36.7GB	15K Ultra160	ST336752LW	8mb	$365
36.7GB	15K Ultra320	ST336732LW	8mb	$379
73.4GB	10K Ultra160	ST373405LW	★4mb	$535
73.4GB	10K Ultra320	ST373307LW	8mb	$543
181GB	7K Ultra160	ST1181677LWV	16mb	$1339

I B M

18.4GB	15K Ultra160	07N6800	★4mb	$190
36.7GB	10K Ultra160	07N6340	4mb	$246
36.7GB	15K Ultra160	07N6801	★4mb	$358
36.7GB	15K Ultra320	08K0342	8mb	$252
73.4GB	10K Ultra320	08K0332	8mb	$524
146GB	10K Ultra320	08K0322	8mb	$998

Hitachi

18.4GB	10,000rpm	DK32DJ-18MW	4mb	$149
36.9GB	10,000rpm	DK32DJ-36MW	4mb	$235
73.9GB	10,000rpm	DK32DJ-72MW	4mb	$525

Ultra320 Drives require Adaptec's Ultra320 Controller to achieve full performance - A39320D $259

Controller Cards

SCSI Controllers

Adaptec	RAID 2000S	$225	19160 Kit $219
Adaptec	RAID 2005S	$224	29160 Kit $295
Adaptec	RAID 3210S	$654	29160N Kit $279
Adaptec	RAID 3400S	$814	39160 Kit $340
Adaptec	RAID 5400S	$900	
Adaptec	DuraStor 6200SS Bundle Kit		$6278
Adaptec	DuraStor 7220SS Bundle Kit		$7710
LSI Logic	LSI20320 Ultra320 PCI-X 64bit		$199

IDE Controllers

Adaptec	ATA RAID 1200A Kit	$65
Adaptec	ATA RAID 2400A Kit	$320
Promise	ATA133 Card ULTRA133TX2	$49
Promise	ATA100 2ch RAID FASTTRAK100TX2	$87
Promise	ATA133 2ch RAID FASTTRAKTX2000	$100
3Ware	ATA133 2ch Raid 32bit 7000-2	$115
3Ware	ATA133 4ch Raid 64bit 7500-4	$299
3Ware	ATA133 8ch Raid 64bit 7500-8	$429
3Ware	ATA133 12ch Raid 64bit 7000-12	$699

Firewire Controllers

Adaptec	1394/Firewire CardBus Kit	$79
Orange Micro	Firewire 3 Port PCI Card	$48

USB Controllers

Adaptec	USB 2.0 2-port CardBus Kit	$65
Orange Micro	USB 2.0 4 Port PCI Card	$47

BOOMS Speakers

Klipsch

Klipsch	5.1	6pc	$399
Klipsch	4.2	6pc	$359
Klipsch	4.1	5pc	$199
Klipsch	2.1	3pc	$179

Logitech

Z540	4.1	40W	$59
Z640	5.1	51W	$70
Z560	4.1	400W	$145
Z680	5.1	480W	$288

Creative Labs

Inspire4400	5pc	41W	$55
Inspire5300	6pc	48W	$71
Inspire5700	6pc	79W	$241

Altec Lansing

641	5pc	400W	$145
ATP4	5pc	80W	$108
ALZ100	3pc	40W	$75

CDRW/DVD Drives

CDRW Drives

			Beige	Color
24x10x40	IDE	Pacific Digital U-30106	$45	$60
32x12x40	IDE	Pacific Digital U-30119	$50	$65
40x12x40	IDE	Plextor PXW4012TA/SW	$119	$124
40x12x48	IDE	Teac CDW540E/KIT	$80	$95
40x12x48	IDE	BenQ 4012P	$57	$72
40x16x48	IDE	Pacific Digital U-30133	$60	$75
44x24x44	IDE	Yamaha CRW-F1ZE	$142	$157
48x12x48	IDE	Pacific Digital U-30127	$80	$95
48x12x48	IDE	Lite-On LTR48125S	$65	$80
48x16x48	IDE	BenQ 4816P	$62	$77
48x16x48	IDE	TDK AI-481648	$101	$116
48x24x48	IDE	Goldstar GCE-8481BI	$74	$89
48x24x48	IDE	Sony CRX215A1	$81	$196
48x24x48	IDE	Lite-On LTR48246S	$62	$77
48x24x48	IDE	Plextor PXW4824TA/SW	$123	$138
52x24x48	IDE	TDK AI-5200	$94	$109
52x24x52	IDE	Lite-On LTR5224	$78	$93
52x24x52	IDE	BenQ 5224P	$79	$94
12x10x32	SCSI	Plextor PXW1210TS/SW	$215	$230
44x24x44	SCSI	Yamaha CRW-F1ZS F-Cav	$234	$240

DVD Drives

16x/48x	IDE	Toshiba SDM1612TA	$75	$90
16x/40x	IDE	Pacific Digital U-30115	$59	$74
16x/40x	IDE	Pioneer DVD Slot DVD106	$69	$84
16x/40x	IDE	BenQ DVD1648A	$80	$95
10x/40x	SCSI	Pioneer DVD305S	$104	$119

CD-ROM Drives

52x	IDE	Lite-On LTN525	$35	$50
56x	IDE	BTC G6Z1D	$34	$49

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USB2.0 Hard Drives

Buslink	40GB	7200rpm	UII-4072E	$172
Buslink	60GB	7200rpm	UII-6072E	$199
Buslink	80GB	7200rpm	UII-8072E	$236
Buslink	100GB	7200rpm	UII-1007E	$285

USB Removable Drives

Iomega	100MB Zip Ext USB Drive 31714	$79
Iomega	250MB Zip Ext USB Drive 31310	$116
Iomega	750MB Zip Ext USB Drive 32324	$161

USB CDRW Drives

Iomega	32497 48x24x48 USB 2.0 CD-RW Kit	$162
Sony	CRX2100U 48x12x48 2.0 CD-RW Kit	$145
Pacific Digital	U-30125 32x12x48 USB 2.0 CD-RW Kit	$140
Pacific Digital	U-30128 48x12x48 USB 2.0 CD-RW Kit	$170
Plextor	PXW4824TUSW 48x24x48 USB 2.0 CD-RW Kit	$179

USB DVD Recorders

Sony	USB 2.0 DVD-R	DRX500UL	$399

USB DVD/CDRW Combo

Sony	USB 2.0 24x10x24/8x	CRXP90MU	$232
Plextor	USB 2.0 8x8x24/8x	PX-208U/SW	$244

Firewire Hard Drives

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Buslink	80GB	7200rpm	FW8072E	$237
Buslink	100GB	7200rpm	FW10072W	$285
Buslink	120GB	7200rpm	FW12072W	$313
Iomega	80GB	7200rpm	32387	$244
Maxtor	160GB	5400rpm	X01FWRA160	$347
QPS	60GB	7200rpm	QPM3HD72F60L	$195
QPS	100GB	7200rpm	M3HD72F100L	$338

Firewire CDRW Drives

Buslink	48x12x48	RW-4848FE	$172
Iomega	40x12x48	32359	★$113
Yamaha	44x24x44	CRW-F1ZDX	$259

Firewire DVD Drives

Addonics	8X DVD/24X	DVD8X24FW	$272
LaCie	DVD-R/RW & CDRW	300164	$460

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40x12x40 Plextor CDRW Silver Pacific digital
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Athlon XP1800+	$91	Xeon 2.4GHz 512 cache		$267
Athlon XP1900+	$102	P4	2.26GHz 512k 533	$215
Athlon XP2000+	$113	P4	2.4GHz 512k 533	$216
Athlon XP2100+	$141	P4	2.53GHz 512k 533	$272
Athlon XP2200+	$170	P4	2.6GHz 512k 533	$440
Athlon XP2400+	$204	P4	2.66GHz 512k 533	$440
Athlon XP2600+	$321	P4	2.8GHz 512k 533	$555
		P4	3.0GHz 512k 533	$699

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NAS	A300U 120GB	$999
NAS	P400U 160GB	$1790
NAS	P400M 160GB	$1999
NAS	P405U 320GB	$2499
NAS	P405M 320GB	$3069
NAS	P410U 480GB	$3150
NAS	P410M 480GB	$4049

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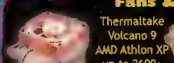
Asus	A7V8XLAN	$120	A7V8XLFWSR $145
	A7V333AU2	$118	A7V333ARU2F $137
	A7M266D	$209	A7N266VM $76
Abit	KX7-333	$84	AT7 $142
	KX7-333R	$99	Kr7A133 $84
Gigabyte	GA-7VAX	$95	GA7VRX $79
	GA-7ZXE	$60	GA-7VKML $65
MSI	K7N420PRO	$132	KT3ULTRA2 $84
	KT4ULTRA	$106	KT4ULTRA-SR $130
Iwill	XP333	$77	MPX2 $198
SOCKET 370 (Flip Chip/Celeron)			
Intel	D815EEA2LU	$111	D815EEA2U $98
SOCKET 478 (Pentium 4)			
Asus	P4B533VLAN	$148	P4B533 $123
	P4T533-C/LAN	$164	P4T533 $171
	P4B533ELFW	$155	P4B266-C $101
Abit	IT7	$142	BD7II $93
	BD7RAID	$130	BD7II-R $110
Iwill	MP4GL	$92	MP4G $109
	P4E	$112	P4R533N $109
Intel	BOXD845BGL	$120	D845HV $97
	D845GEBV2L	$129	845PEBT2 $133

PC Mods

Fans & Grills



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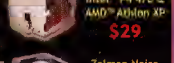

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Atomic 80mm $17, 92mm $19, 120mm $22

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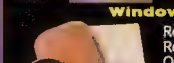
Window Kits



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12" Cold Cathode Neon $39 — Blue, Green, Red

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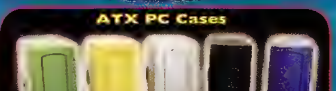
Neon Power Adapter $2 — standard power connector

Water Cooling Kits

CPUFX Complete Water Cooling Kit $199

Cases

ATX PC Cases



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100-433002	RADEON 9000P 128MB	$136
100-434003	RADEON 9700P 128MB	$359
100-710002	AIW RADEON 8500DV 64MB	$180
100-710030	AIW RADEON 8500 128MB	$270
EVGA		
064A4NV76S1	GEFORCE4 TI4200 64MB	$135
128A4NV78S1	GEFORCE4 TI4200 128MB	$158
MSI		
MX400DT64	GEFORCE2 MX400 64MB DDR	$57
G4MX44OVTP	GEFORCE4 MX440 64MB	$88
8870-030	GEFORCE4 TI4200 64MB	$137
8870-040	GEFORCE4 TI4200 128MB	$157
8872-010	GEFORCE4 TI4600 128MB	$250
PNY		
VCGXZA32SPB	GEFORCE2 MX200 32MB	$51
VCGF4TI42APB	GEFORCE4 TI4200 64MB	$147
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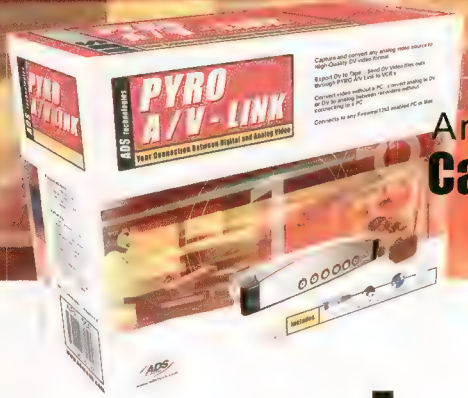

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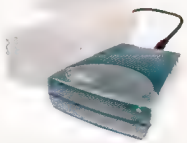

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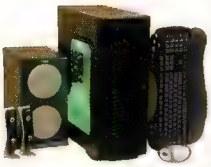

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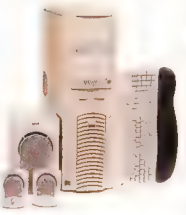

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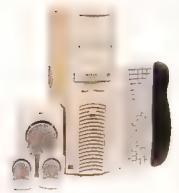

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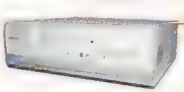

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- 128MB - $79.00
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3.5" Internal ATA / IDE
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- 120GB Maxtor DiamondMax D540X ATA/133 5400rpm $153.
- 180GB WD Caviar WD1800JB ATA/100 7200rpm/8MB Buff - $330

2.5" Notebook Hard Drives
- 20GB IBM Travelstar 40GN ATA-5 4200rpm - $93
- 40GB Toshiba Super Slimline ATA-5 5400RPM - $133
- 60GB IBM Travelstar 60GH ATA-5 5400rpm - $284

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- CD-RW Firewire External 52X24X52 - $196.00
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- 80GB Firewire 7200rpm External Hard Drive - $219.00
- 120GB Firewire 7200rpm External Hard Drive - $265.00
- 80GB USB 2.0 5400rpm External Hard Drive - $206.00
- 120GB USB 2.0 5400rpm External Hard Drive - $255.00

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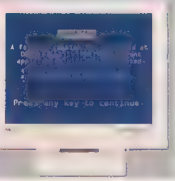

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ABIT www.abit-usa.com

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
ABKX7-333	SOCKET A	6		1	4/DDR	ATX	$79
ABBD7II	P4(SKT 478)	5		1	3/DDR	ATX	$84
ABNX7-133R	SOCKET A	5		1	3/DDR	ATX	$88
ABSK7-8X	P4(SKT 478)	5		1(8X)	3/DDR	ATX	$91
ABBG7	P4(SKT 478)	5		1	3/DDR	ATX	$96
ABKD7	SOCKET A	6		1(8X)	4/DDR	ATX	$104
ABTH7II-RAID	P4(SKT 478)	5		1+CNR	4/RIMM	ATX	$127
ABBW7-RAID	P4(SKT 423)	6		1	3/168	ATX	$132
ABIT7-RAID	P4(SKT 478)	4		1	3/DDR	ATX	$134
ABAT7-RAID	SOCKET A	3		1	4/DDR	ATX	$135
ABAT7-MAX2	SOCKET A	5		1(8X)	4/DDR	ATX	$169

ASUS www.osus.com

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
ASA7S333-WA	SOCKET A	5		1	3/DDR	ATX	$87
ASA7V266-E-WOR	SOCKET A	5		1+AGR	3/168	ATX	$67
ASA7N266-VM	SOCKET A	3		1	2/DDR	MATX	$73
ASP4BGL-VM	P4(SKT 478)	3			2/DDR	MATX	$87
ASP4B266-WA	P4(SKT 478)	6		1+CNR	3/DDR	ATX	$111
ASA7N8X	SOCKET A	5		1(8X)	3/DDR	ATX	$123
ASA7V8X	SOCKET A	6		1(8X)	3/DDR	ATX	$123
ASP4PE/L	P4(SKT 478)	6	LAN	1	3/DDR	ATX	$123
ASA7V333-WR	SOCKET A	5		1	3/DDR	ATX	$132
ASP4S8X	P4(SKT 478)	6		1(8X)	3/DDR	ATX	$134
ASP4GE-V/L	P4(SKT 478)	6	LAN	1	3/DDR	ATX	$138
ASA7V333ODRGD	SOCKET A	5		1	3/DDR	ATX	$139
ASP4B533-V	P4(SKT 478)	6		1	3/DDR	ATX	$147
ASP4B533-E	P4(SKT 478)	6		1	3/DDR	ATX	$154
ASA7N266-E	SOCKET A	5		1+ACR	3/DDR	ATX	$157

INTEL www.intel.com

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
IND845PTL	P4(SKT 478)	3	LAN	1+CNR	2/DDR	ATX	$112
IND845HVL	P4(SKT 478)	3	LAN	1+CNR	3/168	ATX	$97
IND845EBG2L	P4(SKT 478)	6	LAN	1+CNR	2/DDR	ATX	$107
IND845GBVL	P4(SKT 478)	6	LAN	1+CNR	2/DDR	ATX	$110
IND845BGL	P4(SKT 478)	6	LAN	1+CNR	2/DDR	ATX	$112
IND845GRGL	P4(SKT 478)	3	LAN	1+CNR	2/DDR	MATX	$114
IND850EMV2L	P4(SKT 478)	5	LAN	1	4/RIMM	ATX	$152

MSI www.msicomputer.com

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
MIC845ULTRA-C	P4(SKT 478)	6		1+CNR	3/DDR	ATX	$67
MICKT3ULTRA2	SOCKET A	5		1+CNR	3/DDR	ATX	$81
MIC845ULTR-AR	P4(SKT 478)	5		1+CNR	3/DDR	ATX	$103
MIC845GEMAX-L	P4(SKT 478)	6	LAN	1+CNR	2/DDR	ATX	$105
MIC845ULT-ARU	P4(SKT 478)	5		1+CNR	3/DDR	ATX	$122
MIC845EMAX2LR	P4(SKT 478)	6	LAN	1+CNR	3/DDR	ATX	$126

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SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
GBGA-8SR533	P4(SKT 478)	6		1	3/DDR	ATX	$67
GBGA-8IHXP2	P4(SKT 478)	6		1+CNR	4/RIMM	ATX	$162

INTEL www.intel.com

INTEL	CELERON-A FCPGA	1300MHZ	256K	$51
INTEL	CELERON SOCKET 478	1700MHZ	256K	$59
INTEL	CELERON SOCKET 478	1800MHZ	256K	$74
INTEL	CELERON SOCKET 478	2000MHZ	256K	$89
INTEL	PENTIUM III 133MHZ BUS	1266MHZ	512K FCPGA 2	$172
INTEL	PENTIUM III 133MHZ BUS	1400MHZ	512K FCPGA 2	$206
INTEL	PENTIUM 4 400MHZ BUS	1500MHZ	256K SOCKET478	$105
INTEL	PENTIUM 4 400MHZ BUS	1600MHZ	256K SOCKET478	$112
INTEL	PENTIUM 4 400MHZ BUS	1700MHZ	256K SOCKET478	$119
INTEL	PENTIUM 4 400MHZ BUS	1800MHZ	256K SOCKET478	$129
INTEL	PENTIUM 4 400MHZ BUS	1900MHZ	256K SOCKET478	$139
INTEL	PENTIUM 4 533MHZ BUS	2266MHZ	512K SOCKET478	$192
INTEL	PENTIUM 4 400MHZ BUS	2400MHZ	512K SOCKET478	$192
INTEL	PENTIUM 4 533MHZ BUS	2400MHZ	512K SOCKET478	$192
INTEL	PENTIUM 4 533MHZ BUS	2530MHZ	512K SOCKET478	$237
INTEL	PENTIUM 4 400MHZ BUS	2600MHZ	512K SOCKET478	$309
INTEL	PENTIUM 4 533MHZ BUS	2667MHZ	512K SOCKET478	$309
INTEL	PENTIUM 4 533MHZ BUS	2800MHZ	512K SOCKET478	$399
INTEL	PENTIUM 4 533MHZ BUS	3066MHZ	512K SOCKET478	$459

AMD www.amd.com

AMD	SOCKET A ATHLON MP 266 MHZ BUS	1800+	$130
AMD	SOCKET A ATHLON MP 266 MHZ BUS	1900+	$146
AMD	SOCKET A ATHLON MP 266 MHZ BUS	2000+	$147
AMD	SOCKET A ATHLON MP 266 MHZ BUS	2100+	$164
AMD	SOCKET A ATHLON XP 266 MHZ BUS	1900+	$72
AMD	SOCKET A ATHLON XP 266 MHZ BUS	2000+	$79
AMD	SOCKET A ATHLON XP 266 MHZ BUS	2100+	$89
AMD	SOCKET A ATHLON XP 266 MHZ BUS	2600+	$279
AMD	SOCKET A ATHLON XP 333 MHZ BUS	2600+	$279

TOSHIBA www.toshiba.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
TOSDR1202KIT	16X/12X/10X/40X	ATAPI	120MS	2048K	$99
TOSDW2002KIT	6X-24XDVDRAM	ATAPI	120MS	8192K	$379
TOSDR5002KIT	16X/2X/10X/40X	ATAPI	110MS	2048K	$269

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MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
MIT54XIDE	54X/8100KB	ATAPI	85MS	128K	$24
MIT54XIDEBLACK	54X/8100KB	ATAPI	85MS	128K	$29

YAMAHA www.yamaha.com

YACRW-F1EBOEM	44X/24X/44X	ATAPI	160MS	8192K	$134
YACRW-F1EBNOEM	44X/24X/44X	ATAPI/BLK	160MS	8192K	$162

SONY www.sony.com

SYS2X1DEBLACK	52X/7800KB	ATAPI	85MS	128K	$30
SYCRX210EOEM	48X/12X/48X	ATAPI	150MS	2048K	$54

PLEXTOR

PX-W4012BL	40X/12X/40X	ATAPI	150MS		

64MB	8X64	8NS	$12
64MB PC133	8X64	7.5NS	$12
64MB	8X72	8NS	$21
128MB	16X64	8NS	$16
128MB PC133	16X64	7.5NS	$16
128MB	16X72	8NS	$23
256MB	32X64	8NS	$26
256MB PC133	32X64	7.5NS	$26
256MB	32X72	8NS	$38
256MB PC133	32X72	7.5NS	$38
512MB	64X72	8NS	$59
512MB PC133	64X64	7.5NS	$50
512MB PC133	64X72	7.5NS	$59
128MB	16X64	266MHZ	$33
128MB	16X72	266MHZ	$35
256MB	32X64	266MHZ	$68
256MB	32X72	266MHZ	$69
256MB	32X64	333MHZ	$71
512MB	64X72	266MHZ	$162
512MB	64X64	333MHZ	$147
1024MB	128X72	266MHZ	$379

CORSAIR www.corsairmicro.com

PC100/133

CM64S256-133C2	256MB PC133	32X64 CAS2	7.5NS		$63
CM72S256-133	256MB PC133	32X72	7.5NS		$69
CM72S512LP-133	512MB PC133	64X72	7.5NS		$107
CM618DR128A-800	128MB	RDRAM	800MHZ		$57
CM618DR128A-800	128MB	RDRAM	800MHZ		$59
CMXR128-1066	128MB	RDRAM	1066MHZ		$77
CMXR256-1066	256MB	RDRAM	1066MHZ		$147
CM618DR512-800	512MB	RDRAM	800MHZ		$287

RAMBUS MODULES FROM KINGSTON MEMORY

VS128MB100	128MB	16X64 (SDRAM)	8NS		$23
VS128MB133	128MB PC133	16X64 (SDRAM)	7.5NS		$23
VS128MB133A	128MB PC133	16X64 (SDRAM)	7.5NS		$17
VS256MB100	256MB PC100	32X64 (SDRAM)	8NS		$42
VS256MB133	256MB PC133	32X64 (SDRAM)	7.5NS		$42
VS256MB133A	256MB PC133	32X64 (SDRAM)	7.5NS		$31
VS512MB133	512MB PC133	64X64 (SDRAM)	7.5NS		$60
VS512MB133REG	512MB PC133	64X64 (SDRAM)	7.5NS		$81
VS128MB266	128MB PC2100	16X64 (DDR)	2.5CAS		$41
VS512MB266	512MB PC2100	64X64 (DDR)	2.5CAS		$166
VS512MBECC266R	512MB PC2100	64X72 (DDR)	2.5CAS		$197
VS256MB800	256MB PC800	RDRAM			$96
VS256MBECC800	256MB PC800	ECC RDRAM			$109
CM64SD128-2400C2	128MB (CAS 2)	16X64 DDR	300MHZ		$51
CM64SD256-2400C2	256MB (CAS 2)	32X64 DDR	300MHZ		$95
CM72SD256-2100	256MB	32X72 DDR	266MHZ		$102
CMX256A-3000C2	256MB (CAS 2)	32X64 DDR	370MHZ		$104
2100	512MB (REG)	64X72 DDR	266MHZ		$205

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MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
WD400BB	40.0	9 MS/7200	2048K	3.5"/1"H	$81
WD400JB	40.0	8.9 MS/7200	8192K	3.5"/1"H	$91
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WD800BB	80.0	9 MS/7200	2048K	3.5"/1"H	$104
[illegible]					
WD1200BB	120.0	9 MS/7200	2048K	3.5"/1"H	$169
WD1200JB	120.0	8.9 MS/7200	8192K	3.5"/1"H	$179
WD1600BB	120.0	9 MS/7200	2048K	3.5"/1"H	$239
WD1800BB	180.0	8.9 MS/7200	2048K	3.5"/1"H	$279
WD1800JB	180.0	8.9 MS/7200	8192K	3.5"/1"H	$299
WD2000BB	200.0	8.9 MS/7200	2048K	3.5"/1"H	$319
[illegible]					

IBM www.ibm.com

MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
IBM-[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IBM-IC040	40.0	8.5MS/7200	2048K	3.5"/1"H	$83
IBM-IC060	60.0	8.5MS/7200	2048K	3.5"/1"H	$92
IBM-IC080	80.0	8.5MS/7200	2048K	3.5"/1"H	$104
IBM-IC120	120.0	8.5MS/7200	2048K	3.5"/1"H	$164

MAXTOR www.maxtor.com

MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
MAX40U133-72	40.0	9 MS/7200	2048K	3.5"/1"H	$82
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX80733-5400	81.9	9 MS/5400	2048K	3.5"/1"H	$96
MAX80U133-72	80.0	9 MS/7200	2048K	3.5"/1"H	$114
MAX120133-54	120.0	11 MS/5400	2048K	3.5"/1"H	$147
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SEAGATE www.seagate.com

MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
ST340810A	40	8.9MS/5400	2048K	3.5"/1"H	$75
ST340016A	40	9MS/7200	2048K	3.5"/1"H	$81
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ST380021A	80	9.5MS/7200	2048K	3.5"/1"H	$106

MAXTOR www.maxtor.com

MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
MAXW018J2	18	4.5MS/10000	8192K	3.5"/1"H	$93
MAXW018L2	.18	4.5MS/10000	8192K	3.5"/1"H	$95
MAXW036J4	.36	4.5MS/10000	8192K	3.5"/1"H	$197
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAXW073J3	.73	4.5MS/10000	8192K	3.5"/1"H	$539
MAXW073L3	.73	4.5MS/10000	8192K	3.5"/1"H	$539

SEAGATE www.seagate.com

MODEL	CAP (GB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
ST318418N	18.4	7.0MS/7200	2048K	3.5"/1"H	$179
ST318406LW	18.4	5.2MS/10,000	4096K	3.5"/FH	$162
ST318406LC	18.4	5.2MS/10,000	4096K	3.5"/FH	$152
ST318451W	18.4	3.6MS/15,000	8192K	3.5"/FH	$222
ST318452LC	18.4	3.6MS/15,000	8192K	3.5"/FH	$222
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ST336706LW	36.7	5.4MS/10,000	4096K	3.5"/FH	$227
ST336752LW	36.7	3.6MS/15,000	8192K	3.5"/1"H	$369
ST336752LC	36.7	3.6MS/15,000	8192K	3.5"/1"H	$369
ST373405LW	73.4	4.9MS/10,000	4096K	3.5"/FH	$519
ST373405LC	73.4	4.9MS/10,000	4096K	3.5"/FH	$519
ST1181677LWV	181.6	7.4MS/7200	16000K	3.5"/1"H	$1149
ST1181677LCV	181.6	7.4MS/7200	16000K	3.5"/1"H	$1149

MATROX

MODEL		
[illegible]	[illegible]	[illegible]
MATG45032UDOR	G450 32MB, DDR AGP OEM (DUAL)	$82
MATG55032DDRBOX	G550 32MB, DDR AGP RET(DUAL)	$105
[illegible]	[illegible]	[illegible]
MATG45032DDRBOX	G450 32MB, DDR AGP RET(DUAL)	$206
[illegible]	[illegible]	[illegible]
MATPAR128R PARHELIA 512GPU	128MB, DDR AGP RET	$352

ATI www.atitech.com

MODEL		
ATIR9000064O	RADEON 9000 AGP OEM 64MB TV	$67
ATIR8500064A	RADEON 8500 AGP OEM 64MB DDR	$77
ATIRAD900128O	RADEON 9000 AGP OEM 128MB TV	$89
ATIRAD900064PRO	RADEON 9000 PRO AGP OEM 64MB TV	$90
ATIRA8500128A	RADEON 8500 AGP RETAIL 128MB TV&DVI	$172
ATIAIW8500128A	ALL-IN-WOND 8500 AGP RETAIL 128MB	$262
[illegible]	[illegible]	[illegible]
ATIR9700128R	RADEON 9700 AGP RETAIL 128MB TV	$359

ABIT www.abit-usa.com

MODEL		
ABGF-MX420	GEFORCE-4 MX420 AGP 64MB	$66
[illegible]	[illegible]	[illegible]
ABGF4MX460	GEFORCE-4 MX460 AGP 64MB	$117
ABGF4270064	GEFORCE-4 Ti4200 W/TV&DVI AGP 64MB	$137
ABGF4200128	GEFORCE-4 Ti4200 W/TV&DVI AGP 128MB	$157
ABGF4TI4400	GEFORCE-4 Ti4400 W/TV&DVI AGP 128MB	$227
[illegible]	[illegible]	[illegible]
ABGF4TI4600	GEFORCE-4 Ti4600 W/TV&DVI AGP 128M	$252

ASUS www.asus.com

MODEL		
[illegible]	[illegible]	[illegible]
ASV8200T2D64A	GEFORCE-3 DEL V8200T2 T1200 64MB	$189
[illegible]	[illegible]	[illegible]
ASV8440128A	GEFORCE-4 V8440 Ti4400 128MB	$232
ASV8460128A	GEFORCE-4 V8460 Ti4600 128MB	$279

MONITORS

MODEL				
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VIE65	15"	.28DP	1280 X 1024	$128
VIE70F	17"	.25DP	1280 X 1024 (FLAT)	$152
VIE70FB	17"	.25DP	1280 X 1024 (FLAT/BLACK)	$152
VIG70M	17"	.27DP	1280 X 1024	$186
VIG71F+SB	17"	.25DP	1280 X 1024	$175
VIE90	19"	.27DP	1600 X 1200	$201
VIG570	19"	.26DP	1600 X 1200	$285
VIG90F	19"	.25DP	1600 X 1200 (FLAT)	$239
VIE90F	19"	.25DP	1600 X 1200 (FLAT)	$239
VIPF790	19"	.25DP	1600 X 1200	$329
VIG90MB	19"	.26DP	1600 X 1200 (BLACK)	$294
VIP95F+	19"	.25DP	2048 X 1536 (FLAT)	$259
VIP95F+B	19"	.25DP	2048 X 1536 (FLAT/BLACK)	$259
VIG90M	19"	.26DP	1600 X 1200	$294
VIVX500	LCD MONITOR 15" VIEWABLE 1024 X 768			$512
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VIVG171	LCD MONITOR 17.1" VIEWABLE 1280 X 1024			$599
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VIVG175	LCD MONITOR 17.4" VIEWABLE 1280 X 1024			$899
VIVX700	LCD MONITOR 17" VIEWABLE 1280 X 1024			$614
VIVG800	LCD MONITOR 18.1" VIEWABLE 1280 X 1024			$809
VIVG800B	LCD MONITOR 18.1" VIEWABLE 1280 X 1024 (BLACK)			$809
VIVG181	LCD MONITOR 18.1" VIEWABLE 1280 X 1024			$829
VIVG181B	LCD MONITOR 18.1" VIEWABLE 1280 X 1024 (BLACK)			$829
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VIVG191	LCD MONITOR 19.1" VIEWABLE 1280 X 1024			$879
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VIVX900	LCD MONITOR 19.1" VIEWABLE 1280 X 1024			$904
VIVP201M	LCD MONITOR 20" VIEWABLE 1600 X 1200 SPKRS			$1569
VIVP201MB	LCD MONITOR 20" VIEWABLE 1600 X 1200 SPKRS/BLK			$1569
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We don't care if you're a long-haired, pot-smoking, left-leaning libertarian, or a crew cut-wearing, flag-waving, card-carrying member of the Paul Revere Society. How you manifest your patriotism is up to you. But we do want your submission for our **PATRIOTIC PC CASE MODDING CONTEST** to be as spectacular as possible. We're not just looking for elaborate paint jobs and inventive ornamentation—we're looking for highly personalized works of American folk art.

And in the grand American tradition of unapologetic consumerism, we're giving away genuine **FREE STUFF** to the three hardcore PC enthusiasts who create the best mods!

Your submission packet must include the following: Your name, street address, and daytime phone number; three high-resolution JPEGs of your patriotic creation; and a 300-word description of what your PC represents, how it was constructed, and what PC parts and materials it uses. All contest entries must be full-fledged, working PCs.

E-mail your submission packet to input@maximumpc.com by no later than April 15, 2003 (that's Tax Day folks—oh, the irony!). Winners will be contacted by May 1, and the three winning entries will be featured in our July issue.

This "America Pride" paint job was hand airbrushed by Smooth Creations (www.smooth-creations.com) for Falcon Northwest. It's a good thing the large system vendors aren't allowed to enter our contest!

PRIZES!

Each of our three winners will receive a **$500** bundle of upgrade parts and peripherals, including a Creative Labs Nomad Jukebox Zen MP3 player (more details in our February 2003 issue).

Suggested Themes

- *"Stars and Stripes Forever"*
- *"Barrel Bombs and Bottle Rockets"*
- *"The Battle of the Bulge"*
- *"Burning Man: A New American Tradition"*
- *"The Right to Bear Arms"*
- *"Baseball, Hot Dogs, Apple Pie, and Chevrolet"*
- *"July 20, 1969"*
- *"I'm a Yankee Doodle Deejay"*

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- AlienAdrenaline: Video Performance Optimizer
- Removable 3.5" Floppy Drive 1.44MB
- Removable 24X/10X/24X CD-RW/8X DVD Combo Drive
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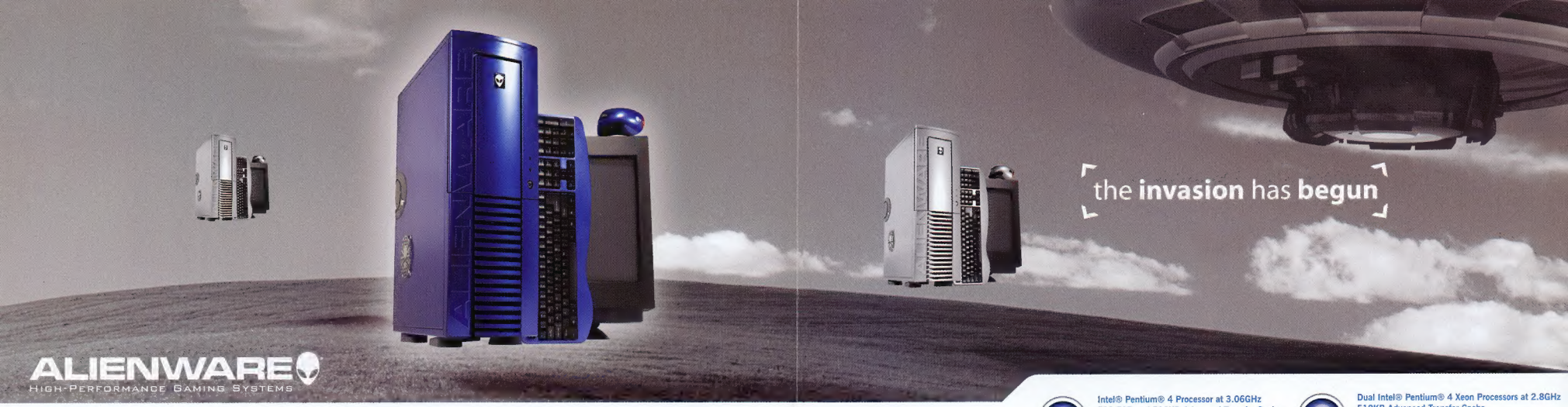

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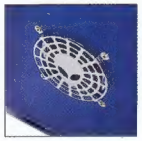

Under the Hood

At Alienware® the selection of components is just as important as building the actual system. No proprietary components are used and every single item put inside the case is guaranteed to be the highest quality component available at that time. Simply put, Alienware® systems are the best systems available.

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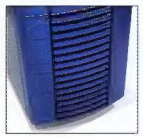

Is There Life Beyond Gaming?

So how does a system built for gaming perform in other tasks? The most demanding tasks a computer system can perform are those which involve complex graphic and video calculations. As a result, a system built for gaming performs above and beyond any standard system's expectations.

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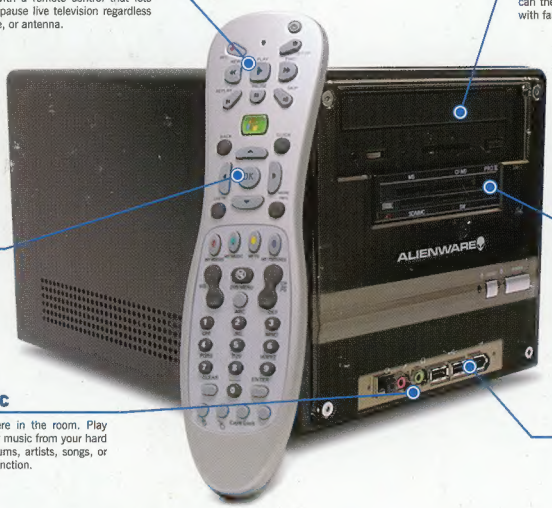

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